

# WAR MONTHLY

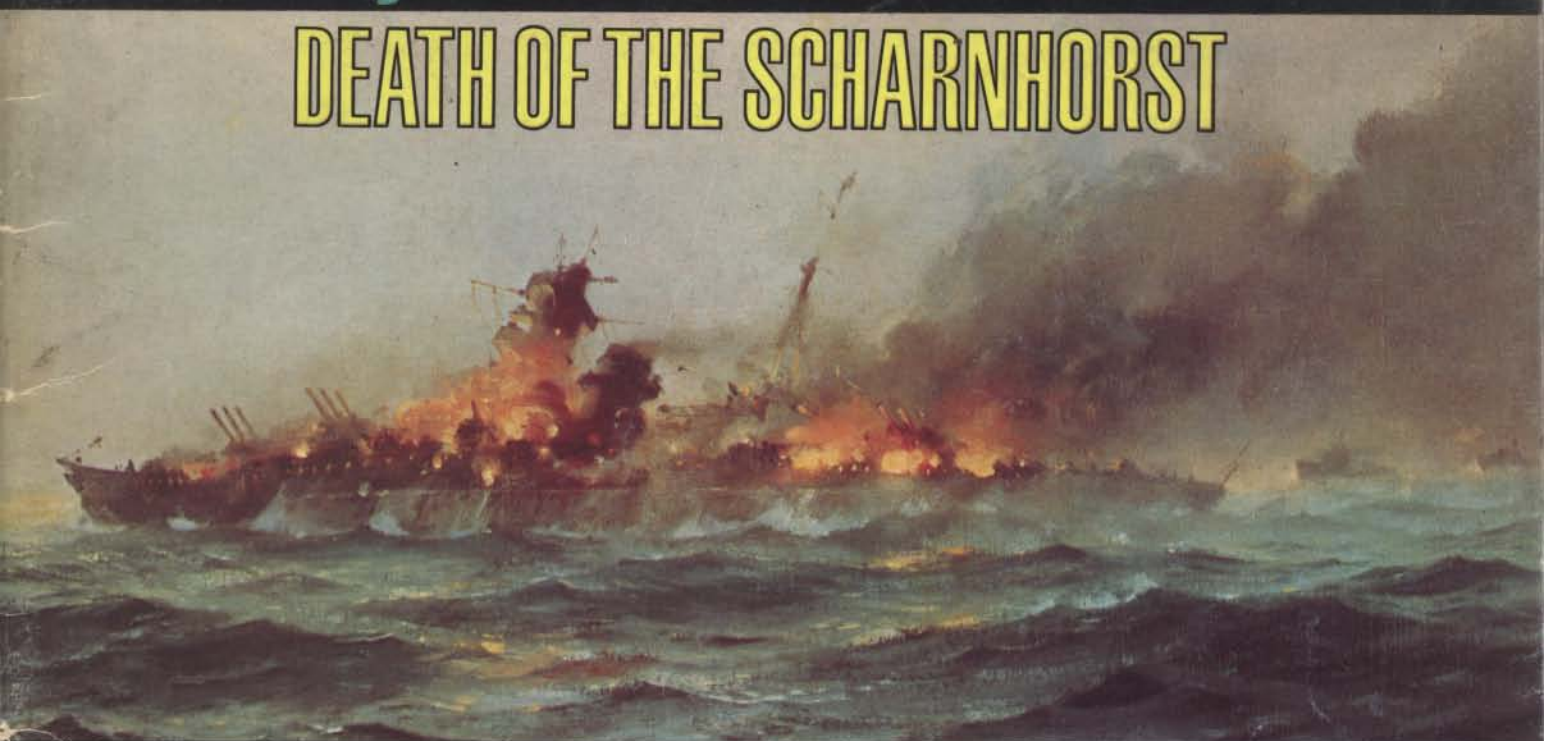
ISSUE 2

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**'Johnny Reb'—America's finest ever?**

**DEATH OF THE SCHARNHORST**



**The last victory of the Desert Fox**  
**GERMANY'S 88: GUN OF MANY ROLES**  
**The truth about the 'Fokker scourge'**  
**THE BITTER SIEGE OF LENINGRAD**



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ISSUE 2

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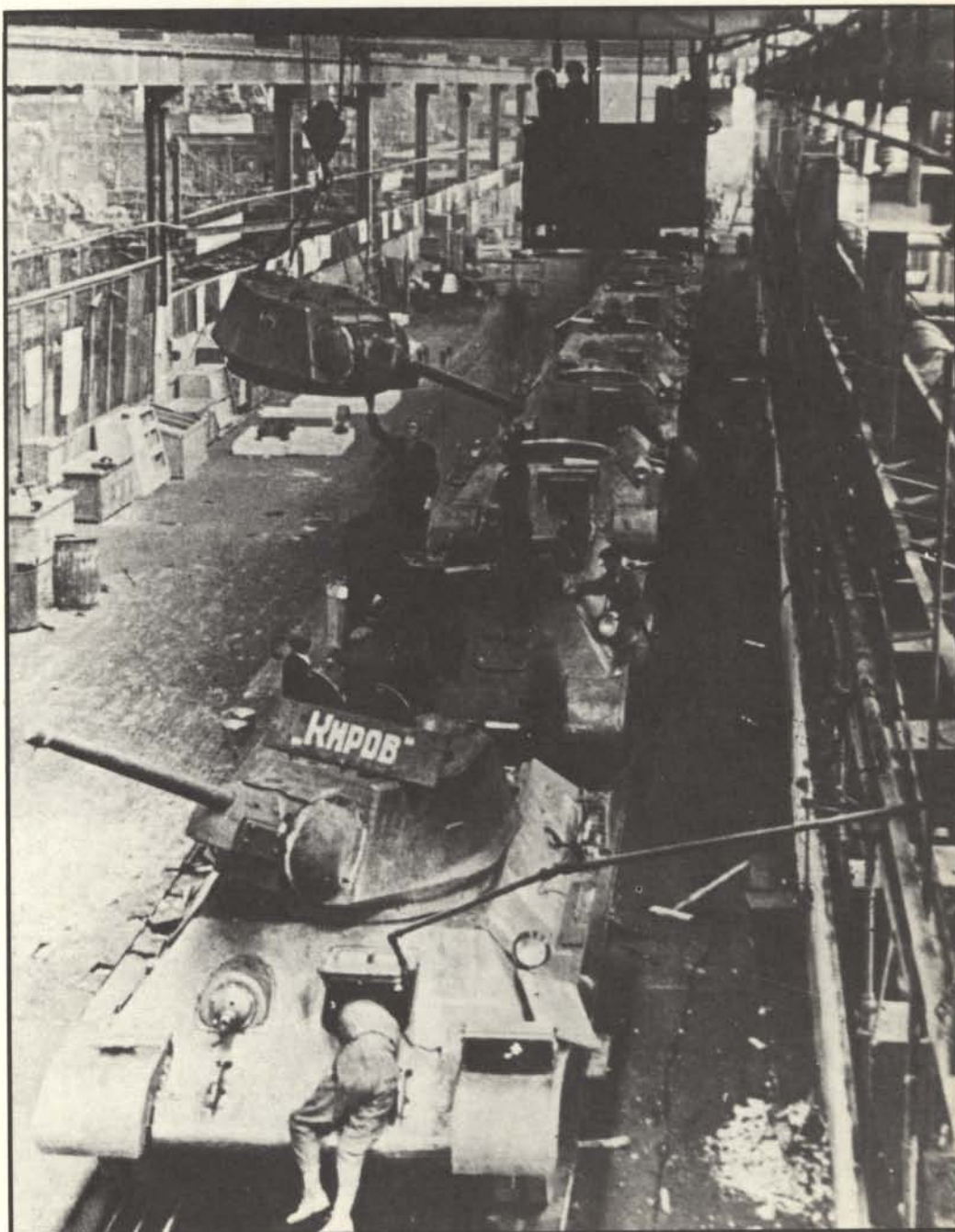
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*During the siege of Leningrad in late 1941, many of the city's 520 arms factories kept going. The Kirov works, greatest machinery plant in the Soviet Union, maintained its tank production while the Wehrmacht hammered at the Red Army along the River Luga. And the city did not yield.*

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# JOHNNY REB

Underpaid, underfed, ill-clad, ill-shod, he still fought like a demon. Was the Southern infantryman America's bravest ever?



◁Private Thomas Taylor of Company K, 8th Louisiana Infantry Regiment. He holds a calibre .58 Springfield rifled musket with an 18in bayonet. Rations and spare clothing were wrapped in his blanket roll. But this smartness is illusory. As 'Johnny Reb's' clothing wore out, he dressed in anything that fitted.

▷General Robert E. Lee, for whom the Confederate troops had great affection. 'I can do anything with these men,' said Lee.





'When my uncle was wounded in the neck in the Civil War, he quickly reached down, grabbed a handful of dirt, crammed it in the bullet hole to stop the blood, and kept on fighting.'

Stories like this, a reminiscence in the early 1900s by Mrs Lillian Foley of Virginia, have made the bravery of the Confederate soldier part of American folklore. Foreign observers of the 1861-65 conflict, like Britain's astute Sir Garnet Wolseley, sang the praises of Confederate units. Modern commentators, like John Laffin in his book 'Americans in Battle', consider them the best the US has ever produced. Others have compared them with the great units of old, such as Caesar's Tenth Legion and Napoleon's famous Old Guard.

Such comparisons are more easily made than justified. But history has known few armies willing to march 20 miles into a battle, hungry, many with their clothes in tatters and their bare feet leaving a visible trail of bloodstains on the road, and still fight stubbornly—magnificently, even—against a disciplined and better-armed foe.

On attack, today's generals reckon, a military unit will begin to crumble when its casualty rate reaches ten per cent. The infamous Charge of the Light Brigade in the Crimean War cost the British cavalry 'only' 36 per cent casualties. At Gettysburg, by comparison, Colonel J. R. Lane's 26th North Carolina Infantry pressed their attack until they had 85 per cent casualties—708 men killed and wounded.

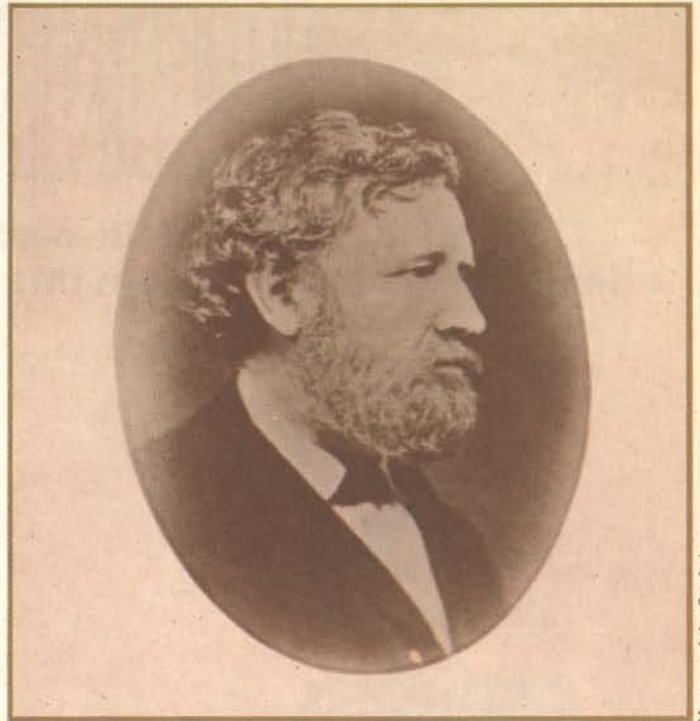
Who were the men who performed such feats? A typical Confederate unit was the 1st Virginia Brigade. Formed at Harpers Ferry in 1861, it consisted of five infantry regiments and a battery of artillery raised in Rockbridge County in the Shenandoah Valley.

### The 'neighborhood' regiments

All were 'neighborhood' regiments—and each had its nickname, reflecting the rivalry between them. The *Innocent* 2nd, from Winchester and the northern end of the valley, was so called because it did not pillage while on the march. The *Harmless* 4th, from the southern end around Pulaski and Wytheville, was known for its good conduct in camp. The *Fighting* 5th was obviously less well behaved (though it lived up to its name in combat). A large number of unruly Irishmen gave the *Bloody* 27th its name. The *Lousy* 33rd was not a poor unit—just the unlucky one that first picked up lice!

The soldiers varied widely in age, and included a big number of the adventurous boys to whom wars always have an attraction. One company of the 5th consisted entirely of German Americans, out of whose 87 original members 84, including a captain, were aged 18 or younger. Their occupations varied, too. Farmers were most numerous in that rich apple- and grain-producing area, but 35 surviving muster rolls show a complete cross-section of society at the time. There were 811 farmers, 477 laborers, 217 carpenters, 142 students, 137 clerks, 107 merchants, 102 tanners and shoe-makers, 75 blacksmiths, 61 painters, 57 machinists, 43 teachers, 41 lawyers, 40 tailors, 33 carriage-makers, 31 cabinet-makers, 30 millers, 26 printers, 22 doctors, 20 boatmen, 16 wheelwrights, 11 railroad employees, 11 butchers, 9 drivers, 8 constables, 8 civil engineers, 6 gunsmiths, 6 bakers, 5 silversmiths, 5 distillers, 4 gentlemen, 2 weavers, 2 dentists, 1 postmaster and 1 minister.

At that stage of the war you could choose your own unit, and help elect your own officer. Comradeship came easily when you were led by a man you knew and trusted. You

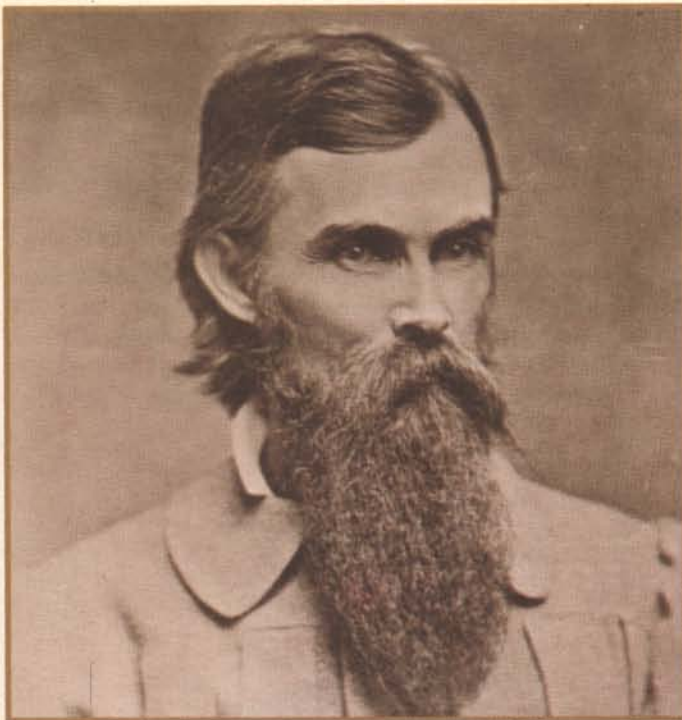


*Some of the Confederacy's 328 brigadier generals—the men who really led Johnny Reb. Regiments were soon so depleted that the brigade of 1,500-2,000 infantry became the real fighting unit. So the brigadier became the tactical commander, while the colonels simply gave the firing orders. The Southern generals' willingness to lead from the front by reckless personal example cost them dearly. One in five of the brigadiers was killed. Some typical generals: 1 Brigadier General Henry L. Benning (1814-95). Nicknamed 'Old Rock' for his toughness in defense. Also won*





2



Museum of the Confederacy

3



Museum of the Confederacy

fame at Gettysburg by pacing up and down the front line shouting to his men, 'Give them hell, boys, give them hell!'

**2** Major General William Mahone (1826-95). A puritanical type of general in the 'Stonewall' Jackson mould; given a division in the last stages of the war. Railroad engineer.

**3** Major General Stephen Ramseur (1837-64). A West Pointer from the last prewar class of 1860; elected colonel of 49th North Carolina Infantry Regiment. Was the youngest brigadier at 26; given a division just before his death.

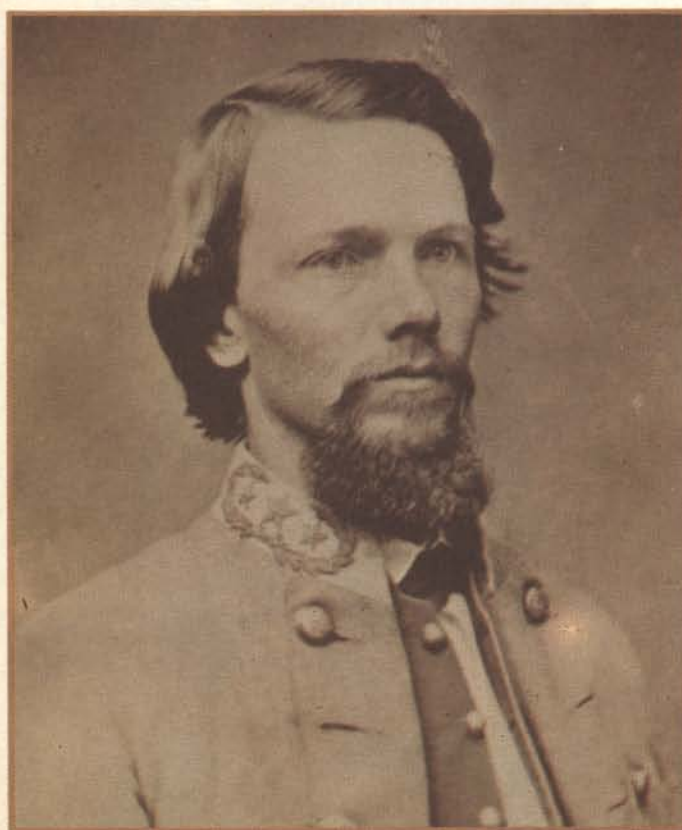
**4** Brigadier General John Pegram (1832-65). Flamboyant

commander who once paraded his men in honor of his new wife. Her fidgety horse bumped the line, provoking a famous Rebel wisecrack: 'Never mind, Miss! You might have rid all over me, indeed you might.'

**5** Brigadier General Evander M. Law (1836-1920). Another young general, who began by raising a company of South Carolina state troops and then became colonel of the 4th Alabama. Wounded five times within the course of one year.

**6** . . . and Britain's Major-General Sir Garnet Wolseley, who wrote admiringly of the 'Rebels'—both generals and men.

5



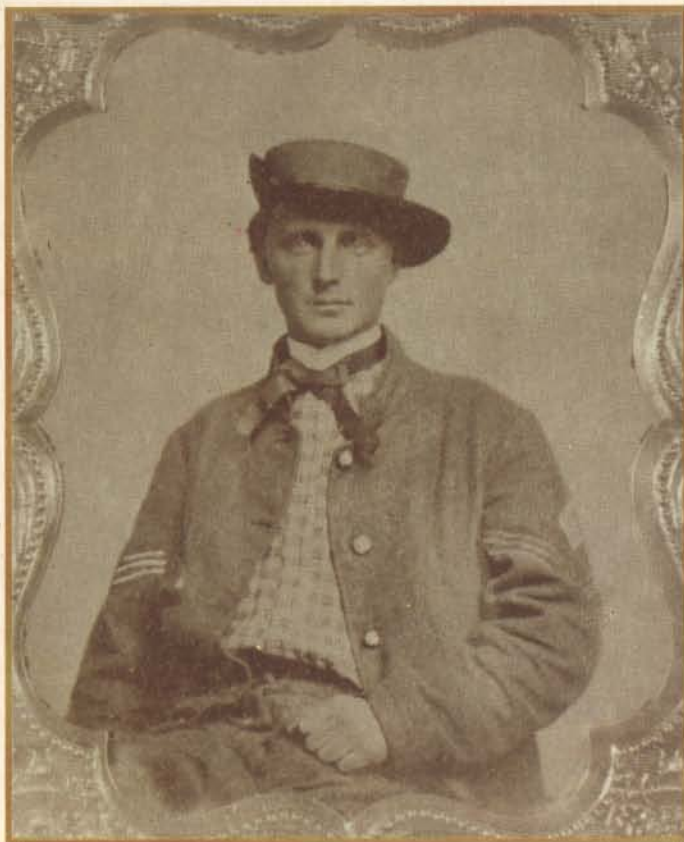
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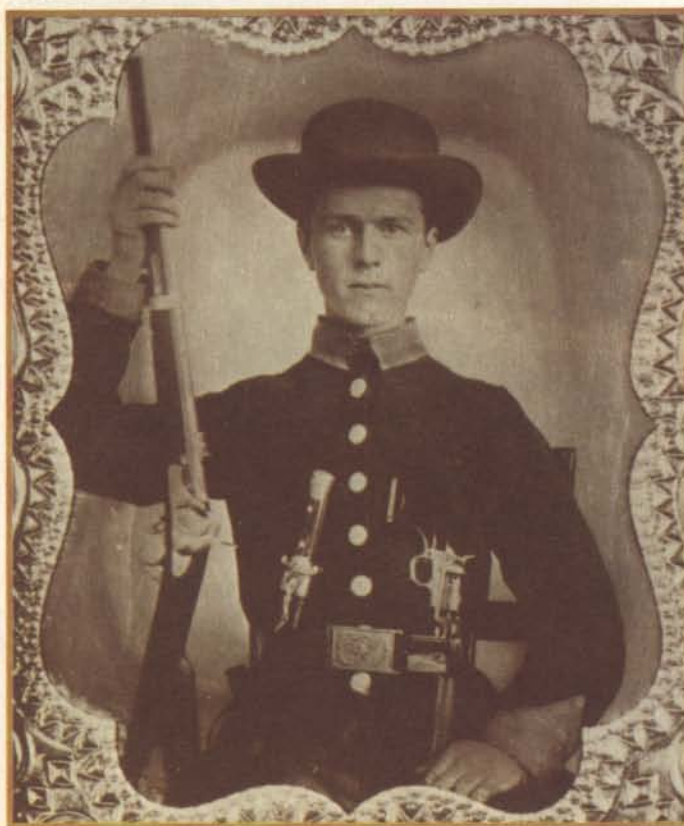
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Museum of the Confederacy

Contrasting styles in the dress of Confederate soldiers:  
 ▲Sergeant John Eagen Howard Post, 1st Maryland Cavalry, affects a check shirt and bow tie beneath his tunic.  
 ▼Captain Robert B. Hurt Jr, Adjutant of the 55th Tennessee Infantry, is in full uniform—and armed to the teeth! His equipment includes dagger, calibre .44 Colt long-barrelled revolver, and calibre .58 rifled carbine.



Museum of the Confederacy

fought better alongside neighbors, or fellow tradesmen, or people of the same ethnic background. This led to some unusual units. One company in the 4th Virginia, known as the *Liberty Hall Volunteers*, had 57 students from Washington College, Lexington, out of its original 69 members. Its first company commander was a professor of Greek. In the course of the war this outfit had a total enrolment of 161 and suffered 203 casualties, showing that many soldiers

*A Zouave of the 1st Battalion, Louisiana 'Tiger' Zouaves, sporting a wicked-looking sword bayonet. Such gaudy uniforms, an imitation of those worn by contemporary French North African troops, were common at first, but soon fell victims to the rigors of active service.*





suffered more than one wound. The 33rd had an Irish company known, appropriately, as the *Emerald Guards*; because of its fondness for fighting and liquor, it became the brigade's 'problem child'.

The most 'exclusive' unit—not unusually in the Civil War, where the artillery attracted many of the best recruits—was the brigade's battery, the *Rockbridge Artillery*. Commanded originally by the Rev. Dr. W. N. Pendleton, rector of Grace Episcopal Church, Lexington, and an old West Point graduate, it was so popular that its membership had to be restricted. Recruiting came largely from college graduates and theological students, and its four guns were once christened Matthew, Mark, Luke and John. During the war 45 of its members received commissions.

Naturally, many members of the same families served together in the 1st Virginia Brigade. In C Company of the 5th Regiment were 18 members of the Bell family, of whom six were killed in action and five died of disease. All six sons of David Barton of Winchester served with the 33rd; two were wounded and two killed, one within sight of his home.

The 1st Virginia Brigade won renown—and its nickname The Stonewall Brigade—at Bull Run in the opening stages of the war. Warned in time of a Federal attack on the Confederate northern flank, a Confederate reinforcement, including General Barnard E. Bee's 3rd Brigade, moved up to guard the threatened flank. This relief force took up a defensive position to the south of Matthews Hill, only to be pushed quickly into retreat. They fell back in disorder



*A sergeant in the Confederate cavalry. His sabre was useful against other cavalymen, but not so good on the battlefield against infantrymen—whose muskets, by 1861, were deadly at 400 yards. So the cavalry often became mounted infantry, fighting with carbines and pistols.*



towards Henry House Hill just as the 1st Brigade, under General Thomas J. Jackson, was approaching the battlefield from the south.

Jackson had arrived from the Shenandoah Valley, having covered about 55 miles in 25 hours, his infantry using the railway for one section of the journey and his cavalry, artillery and wagons coming all the way by road. He went first towards Stone Bridge, but hearing the sounds of battle to the north marched immediately to the sound of the guns.

When Jackson arrived at the top of Henry House Hill, Bee's men were retreating in confusion. Approaching at full gallop, he met his fellow brigadier face to face, Jackson cool and composed, Bee covered with dust and sweat, sword in hand, his horse foaming.

'General,' Bee said, 'they are beating us back!' 'Then, sir, we will give them the bayonet,' Jackson replied and formed up his 1st Brigade in line on the top of the hill.

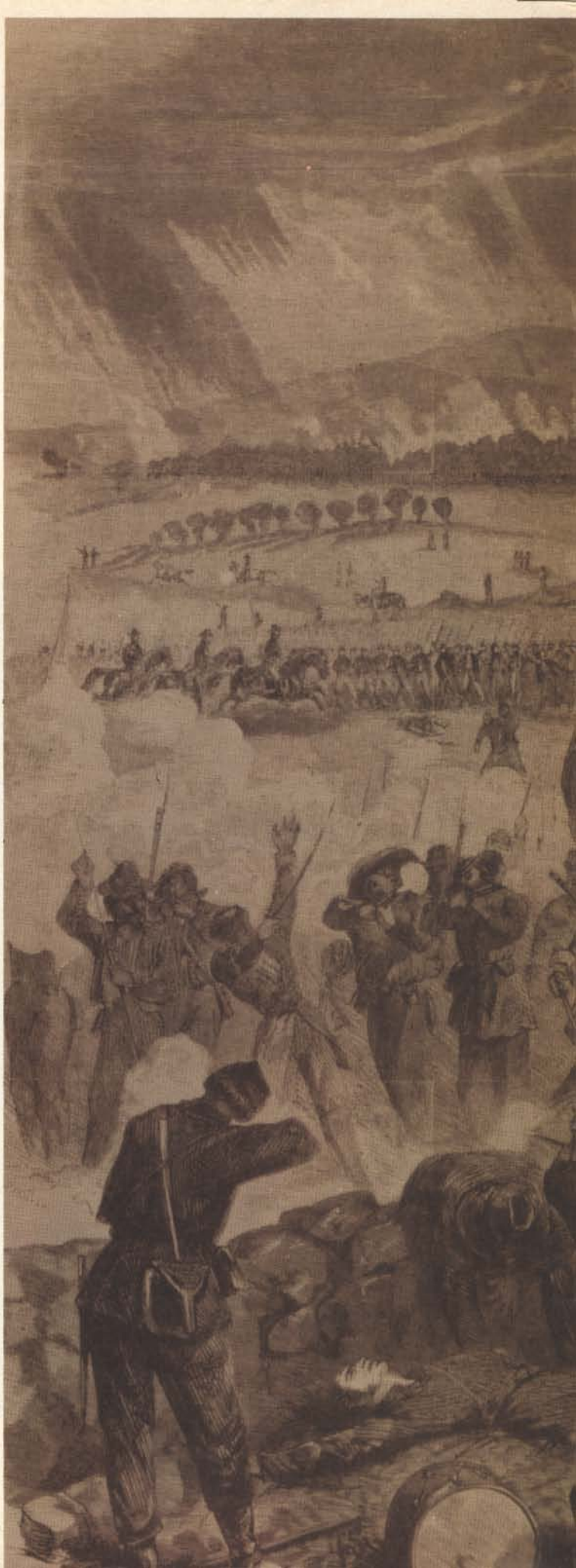
Jackson's determined bearing inspired Bee with new confidence. He turned and galloped back to Robinson House, where the officers of his 3rd Brigade from Alabama and Mississippi were attempting to reform their broken companies. He rode into the confused throng while the fate of the battle seemed hung in the balance, and there occurred one of the dramatic moments of the war. Bee, desperately attempting to rally his men, glanced towards the top of Henry House Hill where Jackson and his men stood firm. Catching the inspiration of the moment, he leaned forward in his stirrups. 'Look!' he shouted, pointing with his sword. 'There is Jackson standing like a stone wall! Rally behind the Virginians!' Bee's men echoed the shout and formed on their colors. The tide of battle turned—and Jackson and his 1st Brigade had won their famous names.

Jackson then addressed his men: 'Reserve your fire till they are within 50 yards, then fire a volley and charge. When you charge, yell like furies!' An unbroken line swelled across the open plain and delivered a murderous fire into the face of the unsuspecting Federals. The Union line fell apart. Before it could recover, 'like wild men' the 2nd, 4th and 27th Regiments charged down the hill by companies, leaning forward as if bucking a strong wind, and drove the enemy from the field.

To visiting foreign generals and war correspondents, of whom there were many in this 'first of the modern wars', the Confederate soldiers looked anything but professional when they were not in action. Desperately short of manufacturing capacity and heavily outnumbered in manpower, the South soon began to run short of clothing and, as the war progressed, of food, too.

Although the officers made some attempt to conform to the Confederate Army Dress Regulations issued before hostilities began, the men generally discarded any worn-out official tunics and headdresses they originally possessed and wore any suitable clothing that came to hand. The French-style *kepi* went out; the floppy felt hat came in. Tunics and trousers came in all shades, from light blue to gray to the butternut color of homespun cloth, and in all conditions of repair from new to tattered. At first it was forbidden to wear Federal uniform, but even this rule was relaxed as shortages worsened.

*This fierce infantry engagement shows the great capacity of the Confederate infantryman for pushing on in the face of close-range fire. His attacking spirit often gave him the edge over Federal soldiers, usually on the defensive and held in check by more formal training and discipline.*







Greatcoats and knapsacks were soon abandoned as too cumbersome for the long marches the troops had to make; all that was kept was a blanket and waterproof sheet slung over the left shoulder and knotted at the waist on the right side. Spare kit was carried in a small haversack, but Stonewall Jackson was said to have considered 'a gum cloth, a blanket, a toothbrush and 40 rounds of ammunition' as the full equipment for one of his soldiers.

On one march by the 1st Virginia, the supply wagons fell far behind. When a halt was called at dusk the soldiers could only stand, hungry and cold, in the midst of the blizzard. It was soon obvious that the wagons could not catch up with the army before morning, so the shivering troops hovered around fires for a while, then tried to sleep 'hog-fashion'. For greater comfort, four or more men pooled what blankets they had and then wrapped up together. If curiosity got the better of a man, and he poked out his head from underneath the blankets, he was pummelled until he 'hailed in his horns'.

During the night, as one lone soldier rolled over in his blanket to let the fire heat his other side, sparks set his cover on fire and they were smoking tatters in a few chaotic moments. 'I wish the Yankees was in hell!' he shouted. 'I don't,' came a voice from beneath a blanket, 'for if they was Old Jack would be within half a mile of them, with the Stonewall Brigade in front.'

#### **Boots—then bare feet**

Boots became an even more serious problem than clothing or blankets. The long boots originally issued wore out, and were replaced by more comfortable, strong shoes. Then these wore out and, for some soldiers, were replaced by improvised moccasins or even bare feet. One eye-witness reported 'brave men with lacerated feet painfully striving to keep pace with their comrades until, worn out by pain or fatigue, they were obliged to yield . . .'. There were many similar accounts.

In provisioning, the men in the western Confederate armies generally fared better than those of General Robert E. Lee's Army of Northern Virginia. These eastern units fought mainly over country which war's scavengers had picked almost bare—of food, of shelter, even of fence posts, which were ripped out and burned as fuel. Often they were hungry; occasionally they starved. Sickness was prevalent, and medical supplies scarce.

But one thing always stayed bright: their rifles. As Sir Garnet Wolseley noted, after a clandestine visit from Canada to the Confederate headquarters in September 1862: 'However slovenly the dress of the men of any particular company might be, their rifles were invariably in good serviceable order. They marched, too, with a . . . elastic tread . . . each man had that unmistakable look of conscious strength and manly self-reliance which those that are accustomed to review troops like to see.'

'Johnny Reb's' weapon could be an old-fashioned smoothbore musket, or a British Enfield, or any of a dozen other types. But the commonest was the US-made Springfield muzzle-loading rifle of 1861. The Confederates got some of these from Southern arsenals when the war broke out, and more than 150,000 were captured.

The South, in fact, relied quite heavily on captured equipment of all sorts. Gen. Wolseley, frankly pro-Confederacy, was amused to find that 'into whatever camp you go, you are sure to see tents, carts, horses and guns all marked with "US". Officers have declared to me that they



have seen whole regiments go into action with smooth-bore muskets and without greatcoats, and known them in the evening to be well-provided with everything—having changed their old muskets for rifles!’

The one thing that horrified Wolseley and other visiting European generals was the Confederate custom of electing junior officers. Brought up in societies where class was rigidly structured, they could see no merit in a system which often put clerk in command of doctor, or carpenter in command of ‘gentleman’.

It was true that the system did lead to indiscipline, on and off the battlefield. At McDowell, during the Shenandoah Valley campaign, for example, a Confederate force occupy-

found partial protection without sacrificing the efficiency of their fire. Their commander, perceiving their useless exposure, endeavored again and again to withdraw them; but amidst the roar of the musketry his voice was lifted in vain, and when passing along the ranks he persuaded one wing of the regiment to recede, they rushed again to the front when he was going to expostulate with the other.’

After four hours’ fighting, the Federals fell back in good order, having inflicted more casualties than they received. The eager 12th Georgia had suffered the heaviest losses but, as one tall youth explained when asked why they did not seek the shelter of the ridge, ‘We didn’t come all this way to Virginia to run before Yankees.’



*The greatest single proof of Southern bravery—Pickett's Charge at Gettysburg. General James Longstreet warned, 'No 15,000 men ever arrayed for battle can take that*

*position.' Brig. Gen. Armistead, with hat on the point of his sword and leading 150 Virginians of the 57th Regiment, threatens to prove that Longstreet was wrong.*

ing Sitlington Hill was attacked by Federals coming down against it from the Mountain Department in the west. Two Federal regiments attacked the Confederate front; three others assaulted the left.

A contemporary report continues: ‘The 12th Georgia holding the centre of the line displayed more valor than judgement. Having advanced in front of the crest to get a sight of their attackers, they could not be persuaded to retire to the reverse of the slope where other regiments

On the march, too, indiscipline led to both straggling and looting being persistent problems. Straggling was so bad that Confederate High Command ordered that ‘men who left the ranks were to be shot without argument’. Looting was sometimes serious, sometimes merely amusing. Major Rob Wheat's battalion of *Tigers*, part of the Louisiana Brigade in the Valley campaign, did a splendid job cutting off an enemy wagontrain retreating from Strasburg to Winchester—but could not resist temptation. Their com-



mander writes: 'The gentle *Tigers* were looting right merrily, diving in and out of the wagons with the activity of rabbits in a warren; but this occupation was abandoned on my approach and in a moment they were in line, looking as solemn and virtuous as deacons at a funeral. Prisoners and spoil were then properly secured.'

But what the professional observers did not, perhaps, appreciate was the energy and initiative of these elected officers—their communities' 'natural leaders'—once they had learned the basics of war. Although elected initially, they won promotion (if at all) on merit. And in the Confederate army it was commonplace to find a colonel in his 20s, and generals of similar age were not all that rare.

Nathan Bedford Forrest, commander of the Confederate cavalry in the Mississippi campaign, was one who came 'from nowhere' to make his mark. A civilian before the war, he enlisted as a private and was a lieutenant general when hostilities ended. He was equally adept at the cavalry tactics of the time and at using his troops as mounted infantry—as he did when he routed two Federal divisions at Brice's Cross Roads, Mississippi, on 10 June 1864.

### Natural flair for command

Forrest was a self-made businessman of no education, but he had a natural flair for command, and his summary of battlefield tactics—the legendary 'Get there fustest with the mostest'—says in six words what better-bred commanders have spent volumes over.

Their regular army generals included some great commanders, too. Jackson, perhaps the war's ablest general, was famous for his mobility. His prodigious marches during the Valley campaign consistently hoodwinked the Northern commanders, drew off forces which might have been used to attack the Confederacy's capital at Richmond—and earned his weary infantry the nickname 'foot cavalry'.

Robert E. Lee was much quicker than others to realize that the basic rules of war had changed. New rifles, more accurate and with a longer range than the old-style smooth-bore muskets, meant that forming up an army into the close-packed lines and squares of Napoleon's day laid it open to brutal slaughter. Better, now, to line up the infantry in trenches, preferably with heavy log structures on top to provide firing apertures.

Most commanders soon tumbled to this, but Lee went one better: he realized—years ahead of the World War I generals, who mostly did not—that headlong assaults on such trenches would cost the attackers heavy casualties. At Chancellorsville, to take one brilliant example, he left his own trenches thinly defended against the possibility of such an attack. Meanwhile he swung the rest of his Confederate forces against the unprotected right flank of the Northern armies, rolling them up to defeat.

Confidence in generals like Lee and others—in contrast to the North, where politically-influenced appointees came and went—was one of the Confederate soldier's greatest strengths. Another was his conviction that he was fighting to save his own homeland from subjugation—in a sort of Second War of Independence. A third was his innate conviction of his own superiority: 'One Confederate can lick ten Yanks.'

Nobody, then as now, held this conviction more firmly than the Texas contingents. One contemporary account carries this story—it sounds familiar to modern ears: 'We moved up to the firing at a gallop, and as we passed along

there came sweeping through the woods . . . a body of infantry in line, moving at a double quick upon the same point, which was but a short distance ahead of us. They were what was left of the famous Texas Brigade. At this time the brigade counted about 130 muskets, commanded by Colonel Duke.

'We had been fighting with them all summer, from Deep Bottom to New Market Heights, to the lines around Richmond, and they recognized us as we rode along their front, and with a yell as fierce and keen as when their three regiments averaged a thousand strong, and nothing but victory had been around their flag, they shouted to us, "Forward boys, forward—and tell them Texas is coming!"'

It was probably to the Texans that the South owed its famous 'rebel yell'. One veteran, John W. Daniel of the 27th Virginia, insisted in an interview with the 'Richmond Times Dispatch' in 1904 that it was at Bull Run, during Stonewall Jackson's famous charge, that the yell was first heard in the Civil War. But the Texas Rangers in the Mexican War used to join a fight uttering horrible shrieks; Jackson might well have got the idea from them.

The Texans had no monopoly of gallantry, however. In the defensive battle at Antietam in Maryland, the Texans distinguished themselves by counter-attacking and restoring the situation in the north near Dunker Church. But the most striking display of bravery was given by the Alabamians and North Carolinians of General Hill's division. These men occupied a sunken road and for three and a half hours held off a greatly superior force, suffering heavy casualties in the process.

### The dead lay thick

One Federal officer wrote that the dead lay so thick in the lane that a man could have walked its length without touching the ground. Another Federal eyewitness said: 'I was astonished to observe our troops moving along the front and passing over what appeared to be long columns of the enemy without paying any attention whatever. I borrowed a glass from an officer and discovered this to be a column of the enemy's dead and wounded lying along the hollow road.'

The South could not for long withstand losses like these. It was outnumbered in manpower by about five to two, and its export-based economy was slowly strangled by the Northern blockade. But the troops themselves sustained their patriotism, and their faith, until the war's dying stages.

Most of the troops were religious, some deeply so. One evangelist who visited Harpers Ferry early in the war wrote: 'I could have sold more than \$100 worth of books a month, if my assortment had been larger—especially if I could have had a good supply of testaments.'

This piety did not detract from their fighting qualities. In one skirmish in the north of the Shenandoah Valley some Virginian companies, woefully outnumbered, were ordered to fall back on the reserve elements. The Federal troops, mistaking the withdrawal for a retreat, rushed forward, their cannon barking behind them. But they dashed straight towards the barrel of one of the Rev. Dr. Pendleton's six-pounders. 'The Lord have mercy on their souls!' the pious Pendleton shouted, 'Fire!'

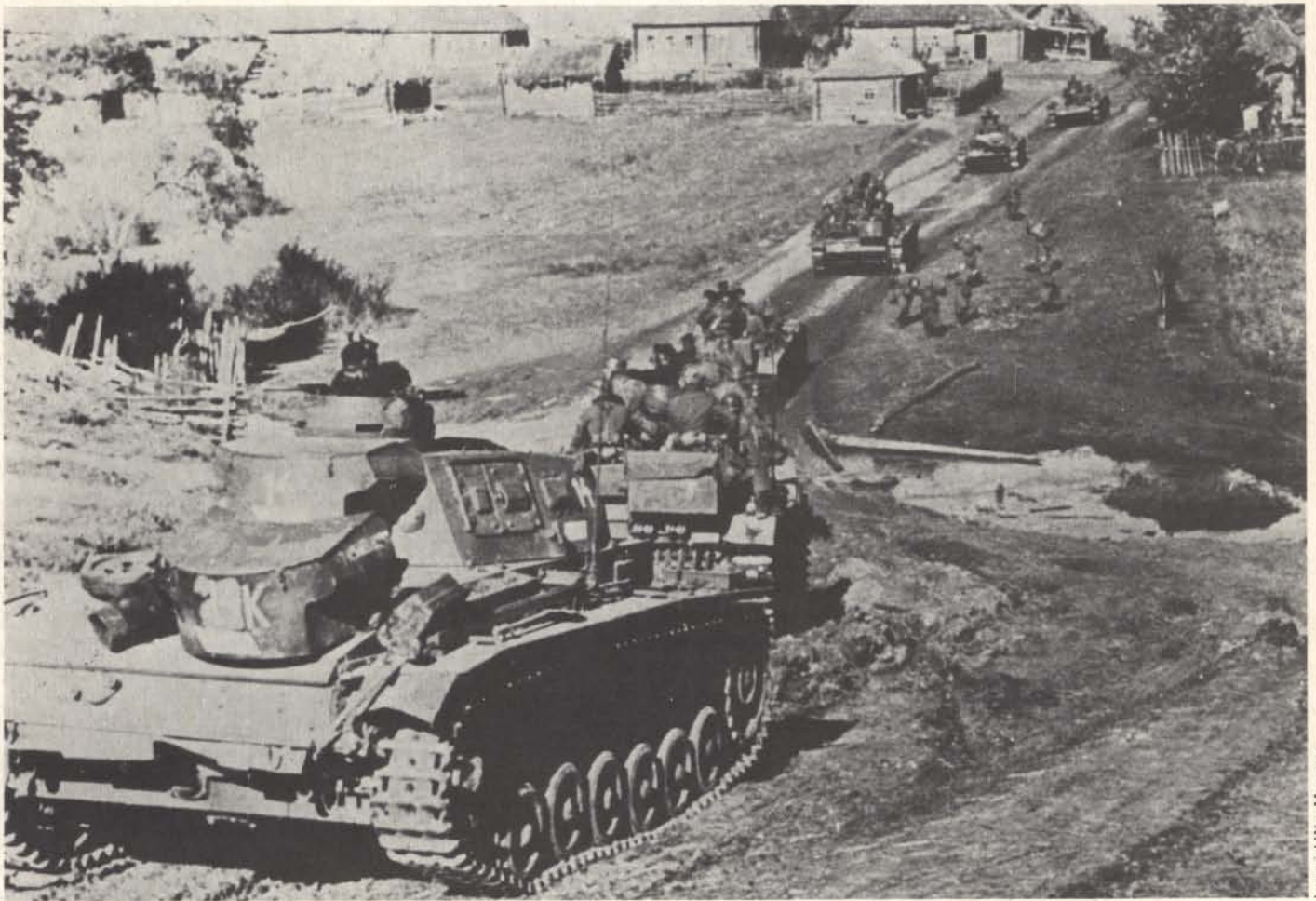
With a hearty 'Amen, brother!' the gunners sent a shot into the middle of the enemy. And the Federals bolted hastily in the opposite direction.

John Selby



# LENINGRAD

**Flatten the city, move or kill its people—that was Hitler's plan. For 3 million defenders, it would be a desperate winter**



Imperial War Museum

*German Panzer Mk IIIs and IVs, carrying their own infantry, trundle towards a Russian village. In early July, Army Group North's 600 tanks advanced 17 miles each day towards the*

*450 miles to Leningrad. But they had to pause to allow the half a million men and horses to catch up. This delay, and desperate Russian attacks, gave the city a month's grace.*

What brought the *Wehrmacht* to a halt at the very gates of Leningrad in 1941? Was it the indomitable spirit of a beleaguered citizen army? Could it have been a breaking from within the German impetus in its thrust forward into Russia's vitals? Or was it the desperation of a population caught frighteningly between a German hammer and the anvil of Communist political oppression?

The three primary objectives for the Germans in their invasion of Russia on 22 June 1941 were the coal and iron fields of the Donet basin in the south, the capital, Moscow, in the center, and the city of Leningrad at the extreme northern point of the front. And to each of these objectives the Germans had assigned a separate army group concentrating their tanks in *Panzer* groups. These were to clear the way and weld the chains of encirclement around the more

cumbersome Soviet forces, whose surrender would be forced by the slower moving infantry divisions that followed in the *Panzers'* wake. In their advance, the Luga River was the last major obstacle facing the German army before the city of Leningrad. But on 8 August 1941 the Russian armies collapsed and the 41st *Panzer* Corps, commanded by General Georg-Hans Reinhardt, broke into open country. The German tanks had already travelled nearly 500 miles on their own tracks and the motorized equipment was overdue for servicing after six weeks of continuous use in the dust and summer heat of Northern Russia. The soldiers themselves were exhausted. They had had only four to six hours sleep a night: but morale was at its height. Now, they felt certain, there would be nothing to stop them capturing Leningrad, the ancient Tsarist capital.



The situation was severe enough for the Russian Chief of Staff, Major General D. N. Nikishev, to report two days later to Marshal Boris M. Shaposhnikov, the Red Army Chief of Staff: 'The difficulty of restoring the situation lies in the fact that neither divisional commanders, army commanders, nor front (army group) commanders have any reserves at all. Every breach down to the tiniest has to be stopped up with scratch sections or units assembled any old how.'

In the city itself, citizens were being conscripted ruthlessly into the *Opolchenye* (militia). But this was little more than an enthusiastic rabble, indifferently armed, without signals

discipline of the Soviet citizens was so different from that of their Western Allies that it is unlikely the German army's tactics (which succeeded the previous summer in France) would have brought lasting victory in Russia.

Then, between 14 and 18 August, all the Russian forces in the area, at the urgent prompting of Moscow, began to advance. And this counter-offensive—uncoordinated, extravagant, tactically inept, with masses of cavalry and unarmored lorries, with soldiers making costly frontal charges—did, nonetheless, have the effect of diverting General Erich von Manstein's 56th *Panzer* Corps, which should have been reinforcing Gen. Reinhardt's 41st *Panzer*



*General Georg Reinhardt (left) commander of the 41 Panzer Corps, with one of his divisional generals. Obeying Gen. von Leeb's orders, Reinhardt lost half his tanks trying to capture Leningrad. The outcome was an exact repeat of his repulse from the streets of Warsaw two years earlier.*

or communications equipment, and whose training had been confined to weekends in local Party camps. A contemporary Russian account says that 'in addition to some rifles and machine-guns . . . the workers were armed mainly with Molotov cocktails and hand-grenades; they also had 10,000 shotguns and about 12,000 small calibre and training rifles donated by the city's population.'

Gloomily, and with the threat of a firing squad hanging over him, Lieutenant General M. M. Popov, the Russian Commander in Chief of the Northern Front, reported to his superiors in Moscow: 'To suppose that opposition to the German advance can be resisted by militia units just forming up, or badly organized units taken from the North-Western Front command after they have been pulled out of Lithuania and Latvia . . . is completely unjustified.' And yet even at this moment a plan to storm Leningrad was not part of the German strategy. As early as 8 July Colonel General Franz Halder, the German army's Chief of Staff, had noted that: 'It is the Fuehrer's firm decision to level Moscow and Leningrad and make them uninhabitable, so as to relieve us of the necessity of feeding the population during the winter. The city will be razed by the Air Force. Tanks must not be used for the purpose.' And on 15 July the German Commander of Army Group North, Field Marshal Ritter von Leeb, was given express instructions that 'the immediate mission is not to capture Leningrad but to encircle it'.

It is possible that Gen. Reinhardt's corps could have driven without a halt to the Nevsky Prospect in those early August days; that the SS could have set up their headquarters in the Winter Palace. But the spirit and enforced



*Field Marshal Ritter von Leeb plans tactics with his Panzer commander, General Erich Hoepner (center right). In July, Hoepner had wanted to drive for Leningrad, only to be refused permission. Then, in September, he was ordered to drive straight for the city's center—but it was too late.*

Corps. For three critical weeks Gen. Manstein's corps marched and counter-marched across the dried-out marshes of the upper Illmen river, further exhausting its men and machines. It was not until September that *Panzer* Group IV could again contemplate the problem of Leningrad.

Within the city the activities of the Communist Party became ever more frenzied: 'Comrade Leningraders! Dear friends! Our dearly beloved city is in imminent danger of attack by German Fascist troops. The enemy is striving to penetrate into Leningrad . . . The Red Army is valiantly defending the approaches to the city . . . and repelling his attacks. But the enemy has not yet been crushed, his resources are not yet exhausted . . . and he has not yet abandoned his despicable plan to capture Leningrad'.

Marshal K. E. Voroshilov and Lt. Gen. A. A. Zhdanov organized a 'Military Soviet for the defense of Leningrad'—an independent move which even at this time of acute danger was bitterly resented by Marshal Josef Stalin who expressed his 'extreme dissatisfaction'. Voroshilov's answer was that 'it corresponded to the actual requirements of the situation'. But Stalin brushed this aside and demanded 'an immediate review of the personnel', and both Voroshilov and Zhdanov were dismissed.

In order to assert the Party supremacy over the Army, Foreign Ministers Vyacheslav M. Molotov and Georgi M. Malenkov were sent from the Committee for the Defense of State to replace them. A special order was issued to the troops: 'Individual soldiers, commanders, and political workers are forgetting . . . their pledge and are revealing in battle a criminal absent-mindedness, faint-heartedness, and



cowardice. Not only are there commanders and political leaders who do not set an example of courage and audacity and do not carry along their soldiers by their example, but there are also loathsome self-seekers who hide in fox-holes and do not lead the fight. Such disgraceful individuals cannot be tolerated in the Red Army. Those who fail to perform their duties have no place in our ranks'.

The rattle of firing-squads could stiffen discipline, but Party theorists were of small value in handling men in battle. And at the end of the month Stalin sent General Georgi K. Zhukov, who was given absolute power. In his day, Zhukov was to visit and stabilize in turn every dangerous sector of

But there remained the danger of epidemics spreading to the German front.

In case Warlimont's proposals should be adopted, corps commanders were alerted to the need for using artillery against civilians trying to break out of the city. It was thought 'doubtful whether the infantry will shoot at women and children trying to break out'.

There was also the possibility of the Germans making propaganda capital out of the affair. A suggestion to: '... the philanthropist Roosevelt to send either food supplies to the inhabitants not going into captivity, or to send neutral ships under the supervision of the Red Cross, or to ship them



the Eastern Front. Few commanders, with the possible exception of Montgomery before Alam Halfa in North Africa, can have arrived at their headquarters with so little time to spare.

On the German side, Wilhelm Ritter von Leeb was clear about his personal ambition—to seize Leningrad, the most prestigious prize of the campaign, by force, thus confirming entitlement to his field-marshal's baton. But Hitler had different ideas. His imprecise instructions were: '... to level the town, make it uninhabitable and relieve us of the necessity of having to feed the population through the winter'. The German High Command were against getting involved with the civilian population at all. One of them, Lieutenant General Walther Warlimont, prepared a memorandum. 'Normal' occupation was rejected. It might be acceptable to evacuate the children and the old people 'and let the remainder starve', but this could lead to 'new problems'. Perhaps the best solution, said Lt. Gen. Warlimont, would be to seal off the whole town, and surround it with an electrically charged wire fence, guarded by machine-guns.

off to his continent . . . Naturally, any response to this which threatened to assume real shape would not have been accepted.

The proper solution was to: 'Seal off Leningrad hermetically, then weaken it by terror (air raids and artillery bombardment) and growing starvation. In the spring we shall occupy the town . . . remove the survivors into captivity in the interior of Russia, and level Leningrad to the ground with high explosives'.

But first the Russian defenders had to be put to rout. Unfortunately for von Leeb's plans, Fuehrer-Directive No 35, issued on 6 September, ordered the diversion of the whole of General Erich Hoepner's *Panzer* Group IV to Army Group Center, where it was to participate in the attack on Moscow. The 8th Air Corps, of close-support dive-bombers, was to cooperate. But Leeb ignored this signal. His plans for a final assault were already complete. By taking advantage of a provision in the Directive that the redeployment be subject to 'first achieving a close encirclement' he staged what was, in effect, a full-scale assault on the city's defenses,



with the 1st *Panzer* Division following the left bank of the Neva and 6th *Panzer* straddling the main railway to Leningrad from the south.

Both divisions were soon enmeshed in a net of anti-tank ditches and straggling earthworks which had been thrown up by the construction battalions and *Opolchenye* during the previous weeks. These defenses were often poorly sited and crudely finished, but they were extensive. The Russians were seriously deficient in artillery, and indeed in all arms not produced on the spot at Leningrad and its environs. But they had a large number of medium and heavy mortars whose weight of fire, at the ranges of the first day's battle,

By the evening of 10 September the Germans had penetrated as far as the last line of Russian defenses, which ran along the crest of some shallow eminences known as the Duderhof heights—about six miles to the south-east of Leningrad. During the night many of the tanks of the leading division, 1st *Panzer*, lay out on the battlefield, forward of the main German positions, and fought throughout the hours of darkness to beat off the succession of counter-attacks which the Russians always put in during the night.

By the glare of blazing petrol bottles and sodium flares the Germans broke up one Russian formation after another as they assembled to charge the positions captured during



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◁A squad of Russian infantry inch their way forward. In the foreground a sled-mounted Degtyarev light machine-gun is giving covering fire. Winter aided the tough Russians, of whom 30,000 were conscripted in one three-day period.

△General Erich von Manstein, who raced his 56 *Panzer* Corps 200 miles in the first five days of Barbarossa. But then his two depleted divisions stopped to rest, while other Germans stuck fast ten miles from the Nevsky Prospect. Manstein later took Sevastopol in 38 days, but by October 1942 he had lost the second chance of taking Leningrad.

was nearly as effective as regular field artillery.

On the coastal sector, between the sea and Krasnoye Seloe, the 12in guns of the Baltic fleet pounded away at the German rear. Over the battlefield, massive KV tanks roamed singly and in pairs, manned sometimes by civilian testers and mechanics from the Kirov factory where they were still being produced at the rate of about four a day. This was the kind of close in-fighting where Russian courage, obstinacy, cunning in camouflage and ambush more than counter-balanced the deficiencies in command and technique which had crippled them in the open battlefields on the frontier and on the Luga.

The *Panzers*, in contrast, were suffering as armored troops always do when they encounter close defenses after weeks of mobile fighting. Like the British 8th Army when it hit the Tunisian mountains after months in Libya, the tank commanders took fearful punishment as they sought to adapt their tactics in an unfamiliar element. In the first day of the assault four successive commanders of 6th *Panzer* were casualties.

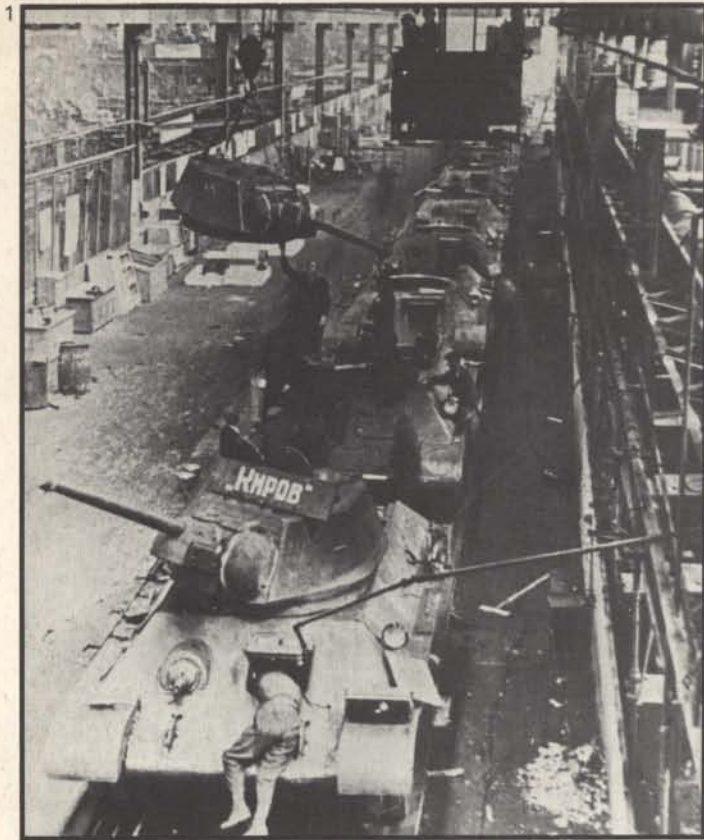
the day. At first light, the *Stuka* dive bombers returned to the battlefield and 41st *Panzer* Corps braced itself for 'one last heave'. The 1st *Panzer* had lost so many tanks that there was only one battalion left with over 50 per cent effective strength, yet they gradually inched their way forward during the day and by 1600 had scaled 'Height 167', a hill 450ft high, the topmost point in the Duderhof ridge to the south-east of the city.

In front of the victorious troops stood the city of Leningrad in the sunlight, only twelve kilometres away, with its golden cupolas and towers and its port with warships that tried with their heaviest guns to deny us possession of the heights.'

On the left flank of the *Panzer* corps the infantry were slowly edging their way across the valley, and once the Russian guns and observers had been cleared off Height 167 the Germans were able to make better progress, entering the suburban districts of Slutsk and Pushkin, and, on the evening of 11 September, Krasnoye Seloe.

By 12 September, the fourth day of the assault, it was





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1 The Kirov 185 Plant at Leningrad. Brand-new tanks at the rate of four a day went straight into action from the assembly line. A year later, the Stalingrad Tractor Plant emulated the feat with 15 tanks a day.

2 Leningrad's life-line—a 3ft thick ice-road across

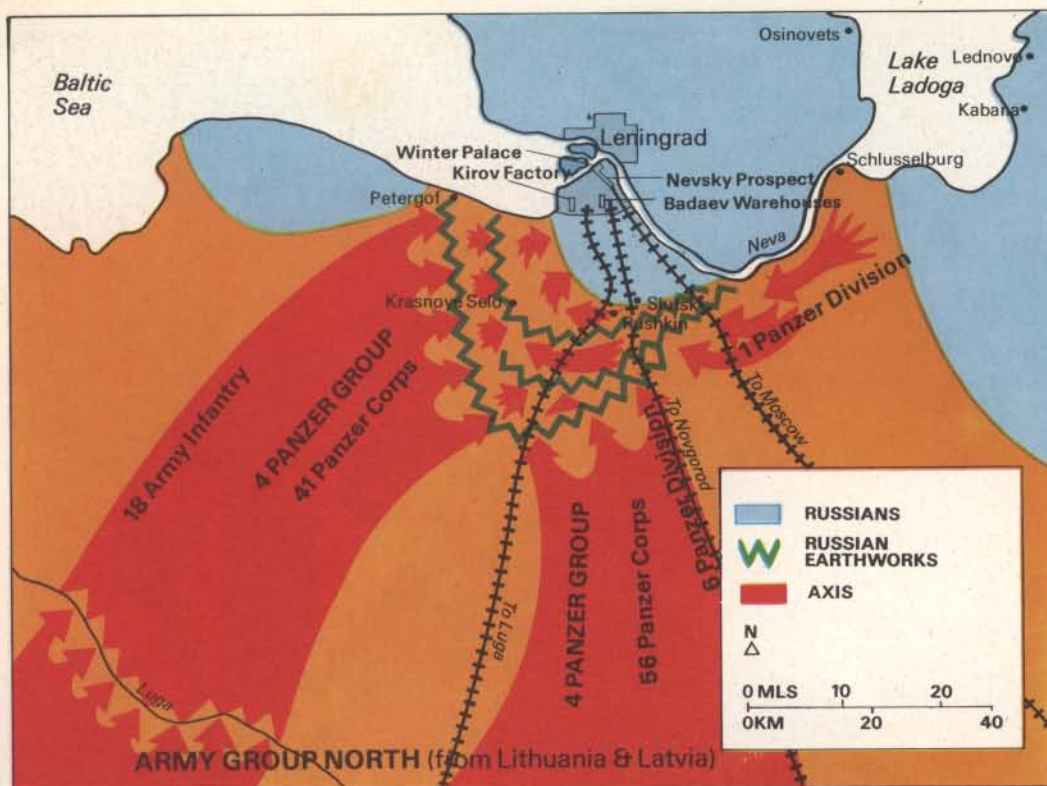
Lake Ladoga. In the first winter, daily delivery of food was 1,700 tons. It took a fortnight's work by 3,500 trucks and 19,000 men to achieve it.

3 Half-a-million people aged 16-50 worked for a month to build three defense lines round

their city. 5,000 bunkers, 620 miles of earthworks, 870 miles of barbed-wire were the prodigious result. Yet this only slowed the German advance.

4 A ferocious propaganda poster tells Leningraders: OCTOBER VICTORY, WE WILL NEVER SURRENDER!





△ The Germans close in on Leningrad (8 August–17 September 1941.) In nine days of savage fighting, 13 divisions smashed into the city's three lines of defense. Ignoring 'Fuehrer Directive No. 35', von Leeb sent his armor to break into Leningrad instead of encircling it. But without Finnish support from the Viborg Peninsula to the north, the German effort reached the point where victory was not possible. It lacked the numbers and momentum to capture the city house by house.

▽ A German supply column in the crippling cold of the winter snow. An infantry army almost entirely dependent on horse transport sat down before Leningrad for three terrible freezing Russian winters.

Davis & Harrison VP Ltd



Peter Sarson/Tony Bryan

painfully obvious to the OKH that a full-blooded engagement was raging in an area from which they were trying to draw reinforcement. Col. Gen. Halder ordered F. M. Leeb that the city '... was not to be taken, but merely encircled. The attack should not go beyond the Peterhof-Pushkin road'. For another five days close fighting continued although at a diminishing tempo. The German resources were not enough to cope with the dilution of their technical superiority which street fighting imposed.

The only alternative to closing down the operation was massive reinforcement on a scale which, one year later, was to be granted to Field-Marshal Friedrich Paulus at Stalin-grad. Halder wrote the epitaph of the battle in the OKH diary 'The ring around Leningrad has not yet been drawn as tightly as might be desired, and further progress after the departure of 1st Panzer and 26th Motorized from that front is doubtful. Considering the drain on our forces on the Leningrad front, where the enemy has concentrated large



▷ A Heinkel 111 medium bomber dives after its bombs have fallen near a large Russian bridge. The city of Leningrad suffered grievously from the German bombing. The Badaev warehouses were destroyed in a raid on 8 September. The Baltic Fleet was penned up in neighboring Kronstadt. Supplies across Lake Ladoga ran the continual risk of air attack. And the anniversary of the October revolution was marked by an especially heavy air raid. But the Luftwaffe lacked enough heavy bombers to obliterate the city of Leningrad or to cut its tenuous link with the rest of Russia.

▽ German infantry file hastily through a burning suburb of Leningrad under Russian artillery fire.



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AP

forces and great quantities of material, the situation will remain critical until hunger takes effect as our ally'.

The weight now shifted from the Red Army's soldiers in Leningrad's defenses to the civilian population, although the Communist Party continued for some months to direct its energies at 'stiffening' the army in case a further assault should develop. A 'letter campaign' from schoolchildren mailed every infantryman with a stilted request that '... you at the front must strike harder at the enemy who had the

gall to attack our great cities and villages ...', and resolutions were constantly sent out from the factory workers to the soldiers in the field:

'With great pain and bitterness we hear that among you there are sometimes cowards and deserters ... The coward and deserter thinks that he will succeed in hiding from the people's censure and anger. He is mistaken. He will be cursed by his own mother, his wife will turn from him, his name will be spoken with loathing by his own children.





△The dreadful human cost of holding Leningrad. In the winter of 1941/2, the victims of starvation and disease died like flies. Death became a commonplace event, corpses were left where they fell. Of the three million people, one million were evacuated, 800,000 died of hunger. Only 200,000 were killed by military action. No other city in recorded history has experienced suffering on this scale. The daily death rate was several thousands.

▽A platoon of Soviet anti-tank riflemen march through the concrete 'Dragon's Teeth' defenses of Leningrad. Their 14.5mm AT rifle was the best of its kind until the American bazooka appeared in 1943.

Novosti



Imperial War Museum

With hatred and contempt—that is how his friends and comrades will greet him. A bullet in the head is what such a scoundrel and self-seeker will get'.

September passed, and October, and with the leaves stripped from the trees along the Neva came the first frosts, followed by snowfalls. Food was already short, for supplies had not been stockpiled in the town. The German advance to Schlüsselburg had occurred so suddenly and the demand for purely military items such as ammunition had been so

acute that very little had been brought into the town before the ring of encirclement was sealed.

In two months, and before the ice on Lake Ladoga began to harden, everything that was edible in the city was consumed. Rats were considered a great delicacy. So too was the earth that came from near the Badaev warehouses where the sugar and chocolate had been stored and which had been burned down in one of the *Luftwaffe* raids. As winter tightened its grip, fuel became as scarce as food.



'First, the feeling of being cold. One gets up with it, one walks with it, one goes to bed with it. It seems to wander around somewhere under the skin; it penetrates the bones and sometimes it seems as if it even enters the brain. One can't escape from it. It penetrates under all shirts, sweaters, and jackets, no matter how many one puts on. The second is the feeling of hunger. This feeling has many shadings—from a dull, painful, sharp, unbearable one, which appears as soon as one has eaten one's ration of 125 grammes, to being tortured by fantasies'.

Soviet records show that of the 26,600 persons who took the basic civilian military training course (the *Vzevobuch* programme) in the month of November over 6,000 were too ill or weak to finish the course. Of these 800 died of starvation while under training. Another 10,000 were so frail that that they could only be given a short course. Trainees were very reluctant to fail as an allocation to the front-line units meant a different and improved ration scale. As fuel ran out so was electricity power confined to military use from emergency generators. In the shorts days of November and December, Leningrad must have seemed a city of the dead, shrouded in snow and freezing mists from the Baltic, without light or movement. In the factories, starving and frozen workers toiled for 14 hours a day making armaments, many dropping dead at their lathes.

Medical attention for civilians was virtually nil. In hospitals 'the absence of electricity, heat, and water made work extremely difficult. The temperature in the wards usually stood between 30° and 35° Fahrenheit. The patients lay fully clothed, with coats and blankets, and sometimes even mattresses, piled on top of them. The walls were covered with frost. During the night water froze in pitchers. The hunger had the effect of causing diarrhea among the patients, many of whom from weakness were unable to use the bedpans. Sheets on the beds were filthy—no water for laundering. The only medicine available was sodium bromide, which the doctors prescribed under various names.'

### The 'sled railway'

The only hope for Leningrad was to bring supplies across the ice on Lake Ladoga from the harbors of Lednevo and Kabana to Osinovets. The lake was not smooth ice. October gales had made the ice pile up in irregular heaps and there were always some crevasses that never froze. On 18 November, when the ice was only 5in thick, a small reconnaissance party made the crossing on foot followed by a man on horseback, and for a few days supplies were brought in by ponies drawing sleds with light loads. The first truck column on 24 November lost nine of its vehicles crashing through gaps in the ice into the water. Only two of the drivers survived. But by the end of November there were 500 trucks in use, battling against arctic blizzards, mechanical breakdowns and constant strafing by the *Luftwaffe*.

It was not until January that the ice was thick enough to allow trucks to carry full loads. Few survived more than three journeys on the ice and over 1,000 trucks were lost before the middle of January when the ice was 3ft thick and could bear almost any load. Yet, in spite of the efforts on the 'ice road', Leningrad never had more than one or two days of food in hand. Even during the previous October the bread ration had been reduced to 400 grammes a day for workers and 200 grammes for other categories and on 20 November these were reduced to 250 and 125 grammes. Under these conditions it was simply a matter of waiting for death by starvation. A schoolgirl, Tania Savich, kept a diary:

'Jenia died on 28 December, 1941, at 12.30 a.m.

Grandmother died on 25 January, 1942.

Lena died on 17 March, 1942.

Uncle Lesha died on 10 May, at 4.00 p.m.

13 May, at 7.30 a.m. darling Mama died.'

Then Tania herself died.

A Leningrad doctor describes his experiences: 'I entered without knocking. My eyes beheld a horrible sight. A dark room, the wall covered with frost, puddles of water on the floor. Lying across some chairs was the corpse of a 14-year-old boy. In a baby carriage was a second corpse, that of a tiny infant. On the bed lay the owner of the room, K. K. Vandel—dead. At her side, rubbing her chest with a towel, stood her eldest daughter, Mikkau . . . In one day Mikkau lost her mother, a son, and a brother who perished from hunger and cold. At the entrance, barely standing on her feet from weakness, was a neighbor, Kizunova, her horrified gaze fixed on the dead. She, too, died the next day.'

Had the Germans been as skilled at offensive warfare under winter conditions as the Soviet Army it is possible that a surprise assault in that first bitter winter of 1941/42 might have overcome its emaciated garrison and populace.

### At last—reinforcements

The awful winter passed, and during the spring and early summer of 1942 the reinforcement of Leningrad by the sea route across Lake Ladoga gathered momentum. Freight steadily increased from 1,500 tons in May to 3,500 tons in June, and the ships took out wounded and non-combatants instead of returning empty. It gradually became apparent to the Germans that Leningrad was threatening their extreme northern flank, and plans were laid for a full-scale assault.

For this, Manstein's 11th Army, which had by now fought a successful Crimean campaign culminating in the capture of Sevastapol, was given the support, once again, of the 8th Air Corps. In addition, a special siege train of 800 heavy artillery pieces was concentrated round the city. But the German plans were foiled by a series of spoiling attacks which the Russians launched at the end of August. Before Manstein had completed the deployment of his forces most of the German resources were used up in preventing the rupture of their corridor to Lake Ladoga.

At the beginning of 1943 the siege was lifted when the Red Army succeeded in forcing a narrow passage about five miles wide along the southern shore of Lake Ladoga and a rail link was established. From then—although the siege of Leningrad was effectively over—the city's fate was ultimately dependent on the outcome of the great battles that raged in southern Russia.

With hindsight we can see that the Germans might have rushed the city in August of 1941. Had the Germans been able to fight aggressively in the depths of winter their best chance would have been at Christmas 1941 when the citizens and the soldiers' spirits were at their lowest. But the intractable problem remained: highly trained and disciplined troops lose their advantage when dispersed over acres of rubble. Street fighting places a premium on numbers and tenacity. It is unlikely that the Germans could ever have succeeded in storming Leningrad any more than (with much greater resources) they could have been successful at Stalingrad the following year.

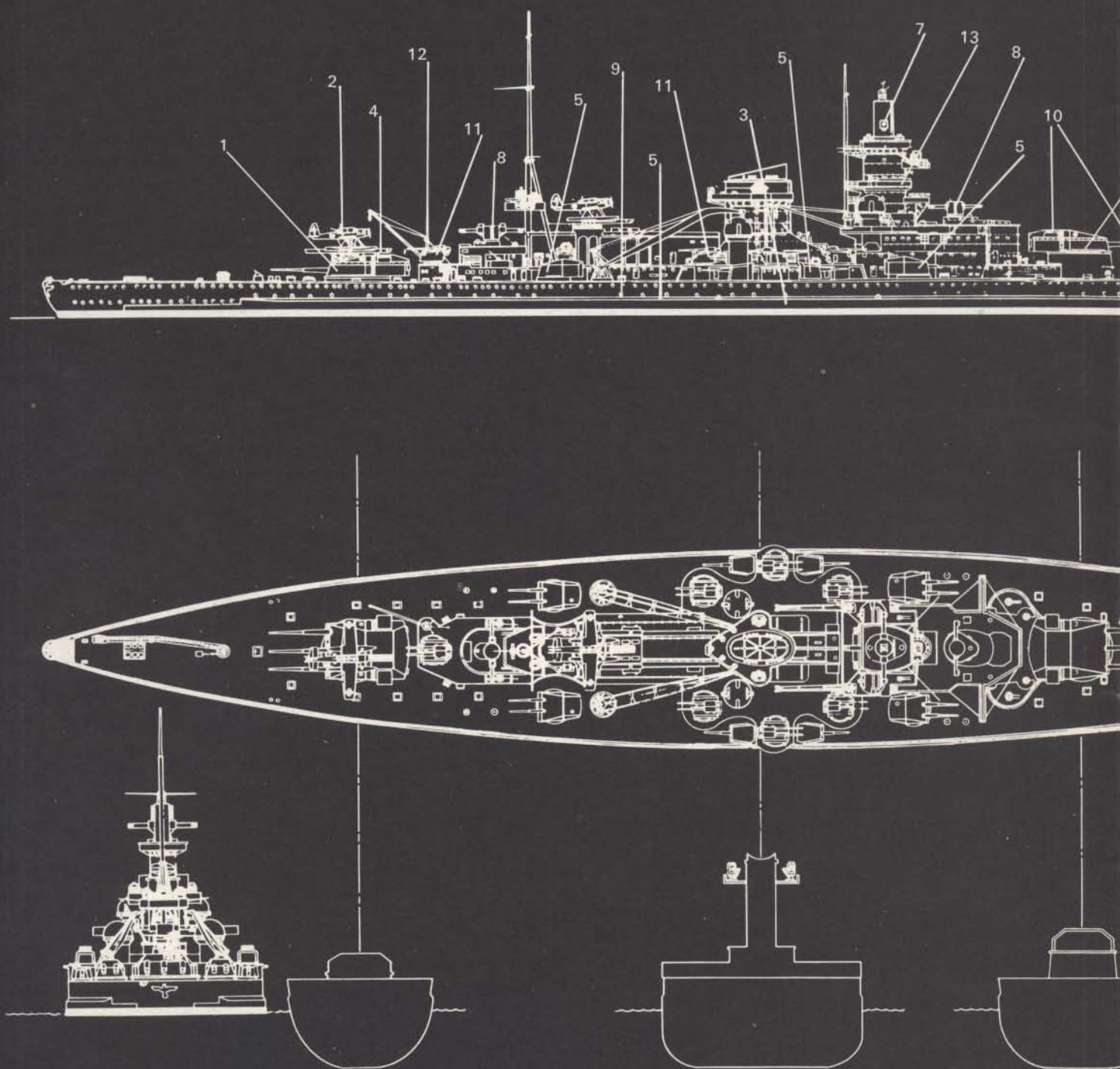
But they did come very near to starving the city out. Was it the iron discipline and terror of the Communist Party system that kept it alive?

Alan Clark



# SCHARNHORST

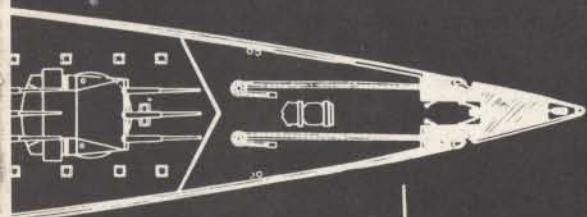
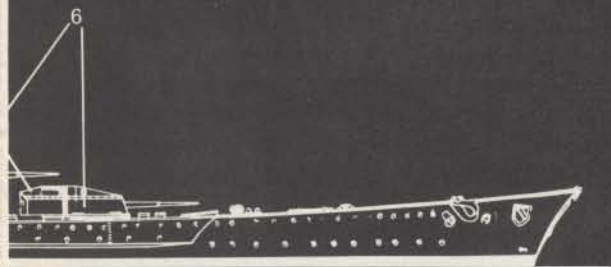
In an Arctic storm, the German giant sallied forth to hammer an ill-protected convoy. Then the British sprang their trap





**SCHARNHORST: built Wilhelmshaven 1934-39.**

<b>Weight:</b> 32,000 tons	<b>1</b> Rear turret, 11in
<b>Length:</b> 742ft	<b>2</b> Arado spotter plane
<b>Beam:</b> 98ft	<b>3</b> Belt armor: 12in
<b>Draught:</b> 25ft	<b>4</b> Plane catapult
<b>Crew:</b> 1,900	<b>5</b> Secondary 5.9in guns
<b>Machinery:</b> Geared turbines, combined with Diesels. Three shafts.	<b>6</b> Front turrets, 11in
<b>Design speed:</b> 27 knots	<b>7</b> Main range-finder
<b>Top speed:</b> 32 knots	<b>8</b> Second range-finder
<b>Aircraft:</b> 4 Arado	<b>9</b> Deck armor, 6in
<b>Total armor:</b> 12,517 tons	<b>10</b> Turret armor, 12in
	<b>11</b> 4.1in AA guns (14)
	<b>12</b> Crane for aircraft
	<b>13</b> Bridge



When *Scharnhorst* left Altenfjord in northern Norway on what was to be her last voyage, she was probably the Royal Navy's most hated enemy. This 32,000-ton German battleship had been the killer of the armed merchant cruiser *Rawalpindi*; she had sunk the aircraft-carrier *Glorious* together with her escorts, the destroyers *Ardent* and *Acasta*, with dreadful loss of life. Even while *Scharnhorst* was holed up in a Norwegian base, powerful Royal Navy units had to be used as cover for the Murmansk convoys to Russia to protect them from the threat of attacks by her nine 11in guns, backed by a formidable array of AA armament and torpedo tubes.

Similarly in the Atlantic. The U-boat menace was grave enough—in November 1942 U-boats sank more than 700,000 tons of Allied shipping in the Atlantic in one month—but *Scharnhorst* could do more damage to a convoy than a whole pack of U-boats.

The Germans for their part, could be more relaxed. Christmas Day 1943 found *Scharnhorst's* crew ignoring the blizzard that raged at the fjord's mouth. Christmas parcels had been distributed, cigar-smoke wreathed the mess-decks and even the presence of the admiral himself did not cramp the celebrations. For Rear Admiral Erich Bey was an old destroyer man, accustomed to the more free-and-easy manners of small ships. He was a real 'old salt', with a friendly smile, a bluff manner and a broad sense of humor—as well as a first-class fighting sailor with a record to prove it.

### 'Lucky' Scharnhorst

With Vice Admiral Oscar Kummetz, his immediate superior, on leave, Bey was about to hoist his flag in *Scharnhorst*, known as the German Navy's 'lucky ship'; a ship with four years of combat in which she had been damaged by mines, torpedoes, aircraft and shells from British capital ships—and had always emerged to fight on. Bey believed in her; Captain Hintze, still new to his command, loved her; her veteran crew worshipped her.

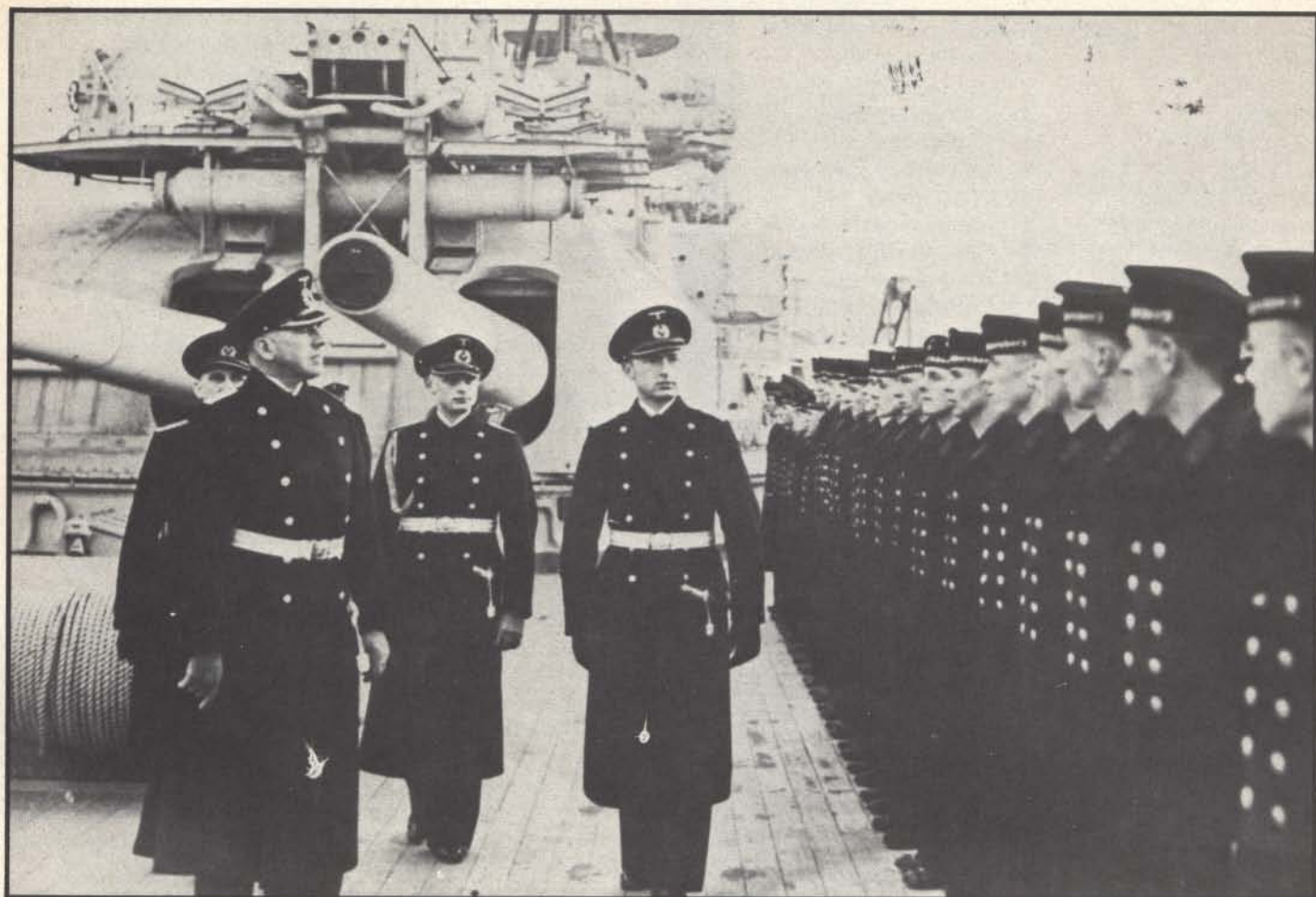
Bey came aboard from the battleship *Tirpitz*, crippled by a British midget submarine attack, and lying some 10 miles back in Kaafjord at the base of Altenfjord. At 1400 he gave the order: 'Make ready for sea'. The Christmas celebrations were over for the battleship's crew of nearly 2,000 men.

Bey had received his directive from Admiral Otto Schniewind, commander of Naval Group North, based at Kiel, who had received it in turn from the Commander-in-Chief, Grand Admiral Doenitz, in Berlin. A British convoy had been reported, Murmansk-bound with arms for Russia, where the Red Army was about to launch a massive counter-attack on the Leningrad front.

Earlier that year, Adm. Schniewind had declared: 'All my commanding officers are in no doubt that the main purpose of their ships is to fight'. But now that *Tirpitz* had been permanently crippled and unable to move, and *Gneisenau* had been smashed by the RAF at Kiel, *Scharnhorst* was his only major unit. And Adm. Doenitz, harassed by Hitler's rages at the Navy's lack of success and his threats to 'scrap all the big ships—draft their crews to the Eastern Front—use their guns for coastal defense—', ordered *Scharnhorst*, his last battleship, to sea.

In the worst of Arctic weather, Bey was ordered to take *Scharnhorst* out with an escort of five destroyers. The target was convoy JW55B, heading towards Russia from Scotland. In November 1943, Bey had said that *Scharnhorst* should not be committed to action until *Tirpitz* could accompany her. Lightning destroyer raids were all that could be con-





Sueddeutschen Verlag, Munich

*Aboard the Scharnhorst in happier days. Vice-Admiral Otto Ciliax leads a crew inspection, followed at a respectful distance by the ship's senior officers. Behind them, the*

*11in guns of the rear turret are plugged with tampions to preserve the rifling in the bore from salt-water spray. On the turret top is the catapult for the ship's plane.*

templated, he warned, adding '... experience in this war which, despite our weakness, has produced many favorable situations for us, justifies the hope that we may have *luck* on our side'. Now he must push his luck to the limit. As *Scharnhorst* and her destroyers left Altenfjord, at about 1900, in the face of blizzards, strong winds and mountainous seas, Bey received a direct message from Doenitz: 'Attack and destroy the convoy to alleviate the struggle of your comrades on the Eastern Front'.

The 19 ships that made up convoy JW55B were not ill-protected. Their close escort of two corvettes and 15 destroyers, led by Captain J. A. McCoy in *Onslow*, was supported by three cruisers under the command of Vice-Admiral Robert Burnett in *Belfast*, in company with *Sheffield* and *Norfolk*. This, German Naval Command believed, was the sum of the convoy's escort. Adm. Doenitz, in his memoirs, said: 'A convoy carrying war material for Russia ... protected by a cruiser escort that was no match for our battleship ... could not hope to avoid our attack'. He had no doubt that *Scharnhorst*, with a speed advantage in a heavy sea, could deal with all three cruisers. He may have decided that the British destroyers would be ineffectual in such weather, because *Scharnhorst* had already reported that her own destroyers were near-helpless in the angry seas.

The first report on the exact position of the convoy had been made as early as 0900 on 25 December by the submarine *U-601*. Subsequent reports from U-boats and

reconnaissance aircraft (when weather allowed them to fly) kept Doenitz, Schniewind and Bey informed on the convoy's movements. Bey had planned to hit the convoy at 'first light'; a vague phrase, since the maximum 'daylight' to be expected in the Arctic winter is an uncertain murk between 0830 and 1530. Otherwise, it is near-total darkness. What the Germans did not know was that on 24 December, Admiral Sir Bruce Fraser, C-in-C of the British Home Fleet, had ordered the convoy on to a reverse course for some three hours and had subsequently increased its speed. These factors were seriously to affect the German calculations.

After receiving a report from *U-601* stating: 'Wind south, Force 7 (up to 33 knots), rain, visibility two miles', Schniewind asked Doenitz to call off the whole operation, since there were signs that the weather would grow even worse. Doenitz ordered that the attack go on. Schniewind complied, but sent Bey a curious signal: '... a concerted attack will *only* be delivered if conditions are favorable. If conditions do not suit *Scharnhorst*, destroyers will attack alone'. Then, remembering that Bey had already hinted that his destroyers could not operate in the heavy seas, Schniewind suggested that Bey should 'consider' an attack by *Scharnhorst* alone. Schniewind was trying to have it both ways: whatever happened, he could now show that he had both urged an attack—and also advocated caution.

The three-cornered exchange of signals between the German admirals had unfortunate results. First, Bey's



signals had been picked up and deciphered by the British; they knew by 0400 on 26 December that *Scharnhorst* was at sea with the destroyers Z-29, Z-30, Z-33, Z-34 and Z-38. As Adm. Fraser had feared, it was obvious that the Murmansk convoy was threatened. Second, in the buzz of talk between the German admirals, a most important message had failed to reach *Scharnhorst* in its entirety. This warning, sent by an aircraft soon after *Scharnhorst* sailed, spoke of 'five warships, one apparently a big ship, north-west of Norway'.

The message reached the admirals by way of *Luftwaffe* intelligence at Kiel. But the *Luftwaffe* officer who took the report was a little too efficient. Knowing of the dreadful weather conditions off Norway (which were to ground most of the *Luftwaffe* on 25 and 26 December), he doubted the accuracy of the report—and censored it! The message as it reached the admirals omitted the phrase 'one apparently a big ship'. Bey assumed, with the tacit agreement of Doenitz and Schniewind, that the sighting referred to his own five destroyers, which he had sent ahead on a scouting run.

But the report was accurate. And the 'big ship' was the Royal Navy's 44,500-ton battleship *Duke of York*, whose main armament was ten 14in guns; she was some four knots slower than *Scharnhorst* but even more heavily armored. The flagship of Fraser's Home Fleet, the *Duke of York*, was accompanied by the cruiser *Jamaica*, the destroyers *Savage*, *Saumarez*, *Scorpion* and the Royal Norwegian Navy ship *Stord*. Six ships in all; and although Fraser (like Bey) had broken radio silence, his messages had not been intercepted by the Germans.

### The trap is set

The battle of North Cape, off the northernmost point of Scandinavia, began on the morning of 26 December 1943 at 0825, when the destroyer Z-29 signalled to *Scharnhorst*: 'Silhouette sighted distance four miles'. The destroyers had made contact with Burnett's cruisers and thus, presumably, with the convoy. *Scharnhorst* drove at 32 knots—full speed—towards the scene. But she was heading into a trap: Burnett's cruisers were well east of the convoy, and now steered to intercept *Scharnhorst*. Fraser, now some 150 miles south-west of the convoy, was heading north-east, also on an interception course. The convoy itself lay farther west than either Fraser or Burnett.

But could the British close the jaws of their trap swiftly enough both to save the convoy and cut off *Scharnhorst*? And could the British destroyers, which were intended to play an important part in the action, operate in a sea so rough that Bey was later to send his destroyers back to base?

The battle was to last for around 12 hours, and *Scharnhorst*'s first encounter with Burnett's cruisers was to lead to her eventual destruction. At 0922, when all three cruisers had made radar contact at ranges between 16 and ten miles, *Belfast* signalled: 'Enemy in sight'. At 0927 Burnett gave the order to open fire. Within three minutes, shells from *Norfolk*'s 8in guns had scored hits—wrecking *Scharnhorst*'s forward radar equipment.

Radar in the British ships was superior to that of the German navy. It enabled the *Norfolk* to find the range of the *Scharnhorst* in near-darkness, while the German's inferior installations meant that reliance had to be placed on optical range-finding methods.

Now, in near-total darkness, *Scharnhorst*'s forward vision was blinded. The British cruisers saw her as a bright 'blip' on their radar screens, but to *Scharnhorst* her adversaries



Imperial War Museum

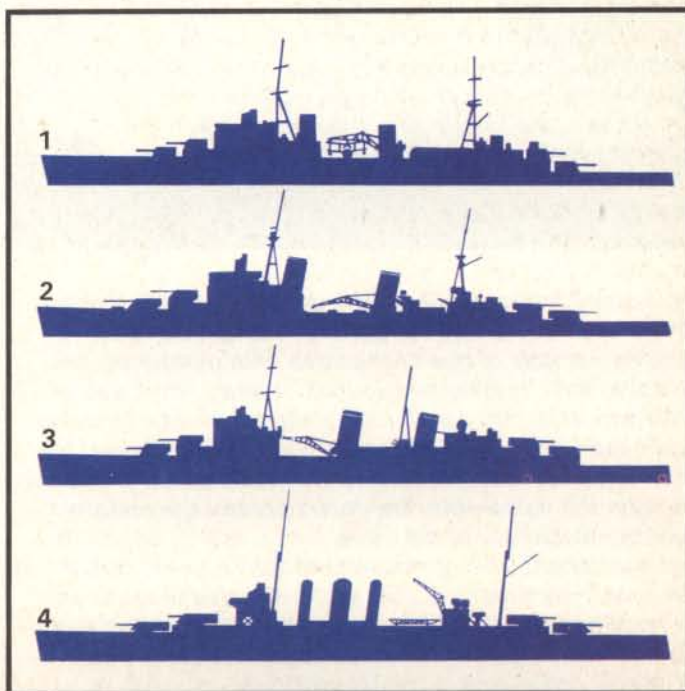
△ Vice-Admiral Robert Burnett, in command of the three cruisers *Belfast*, *Sheffield* and *Norfolk*.

▽ 1 *Jamaica*, built 1940, 8,000 tons: 12 x 6in, 8 x 4in AA, 16 smaller guns; 6 x 21in torpedo tubes.

2 *Sheffield*, built 1936, 9,100 tons: 12 x 6in, 8 x 4in AA, 20 smaller guns, 6 x 21in torpedo tubes.

3 *Belfast*, built 1938, 10,000 tons: 12 x 6in, 12 x 4in AA, 20 smaller guns; 6 x 21in torpedo tubes.

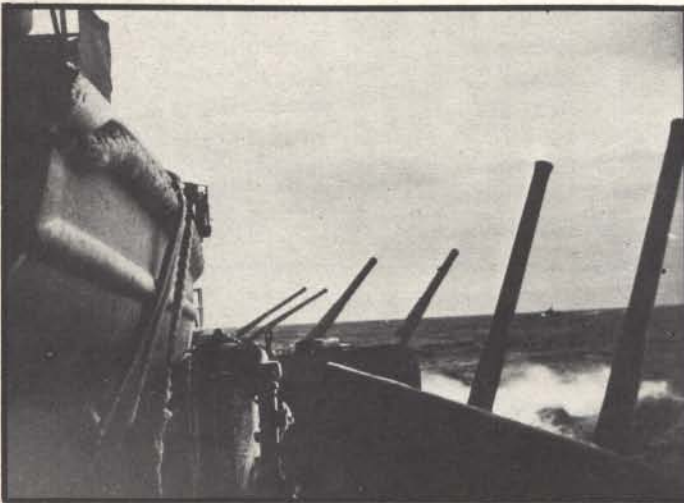
4 *Norfolk*, built 1928, 9,925 tons: 8 x 8in, 8 x 4in AA, 20 smaller guns; 8 x 21in torpedo tubes; one aircraft.







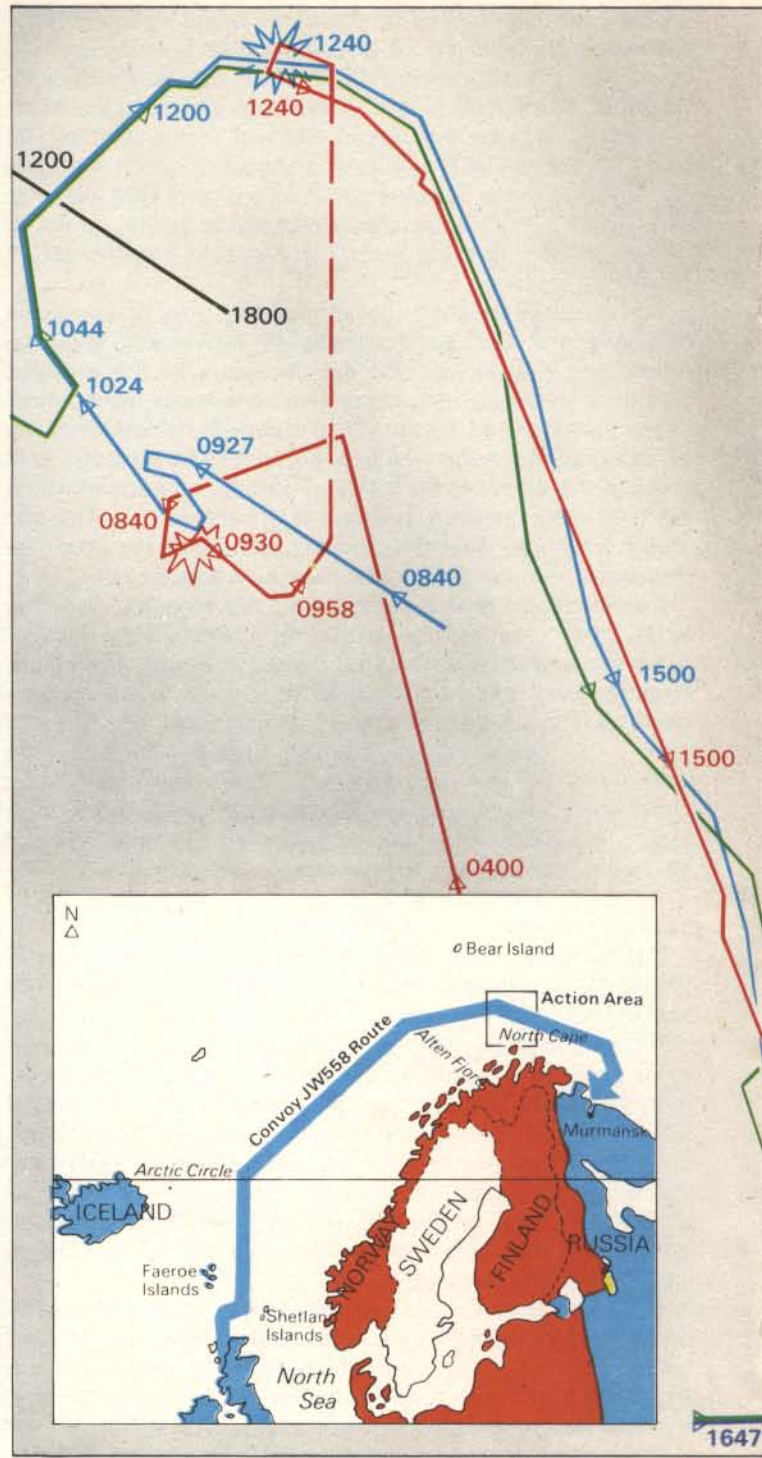
Imperial War Museum



Imperial War Museum

△△ Action! The man behind the guns, Petty Officer Alex Holgate, is 'captain of the guns'. He is operating the loading controls of one of the three 14in gun turrets on Duke of York, hurling two rounds in every minute to a distance of 36,000 yards. P.O. Holgate is wearing gloves and head-covering as protection against flash burns. He is in communication with other members of the gun-crew through the voice-pipe. The levers control the massive breech mechanism of the guns.

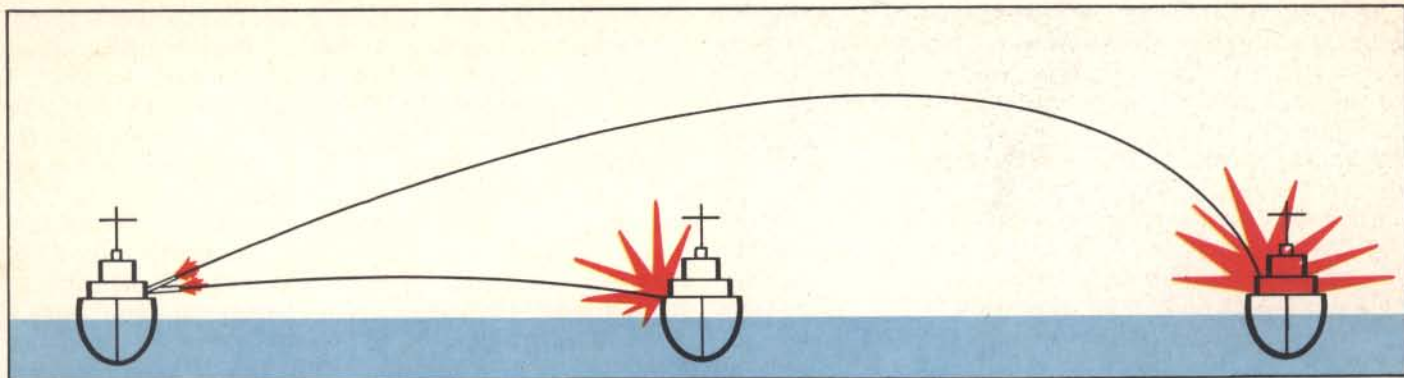
△ The starboard twin-gun turrets of the Duke of York's secondary armament, 5.25in guns, elevated in readiness to repel any air attack. The ice encrusted on one of the ship's boats is grim evidence of the freezing severity of winter conditions in the Barents Sea.



were no more than shadows glimpsed occasionally through the half light. Only in the little daylight that could be expected if the weather improved would *Scharnhorst* be able to exploit her superior fire-power. Now she could only rely on her speed to dodge around the cruisers, rather than fight a way through them, strike at the convoy, and then head back to base.

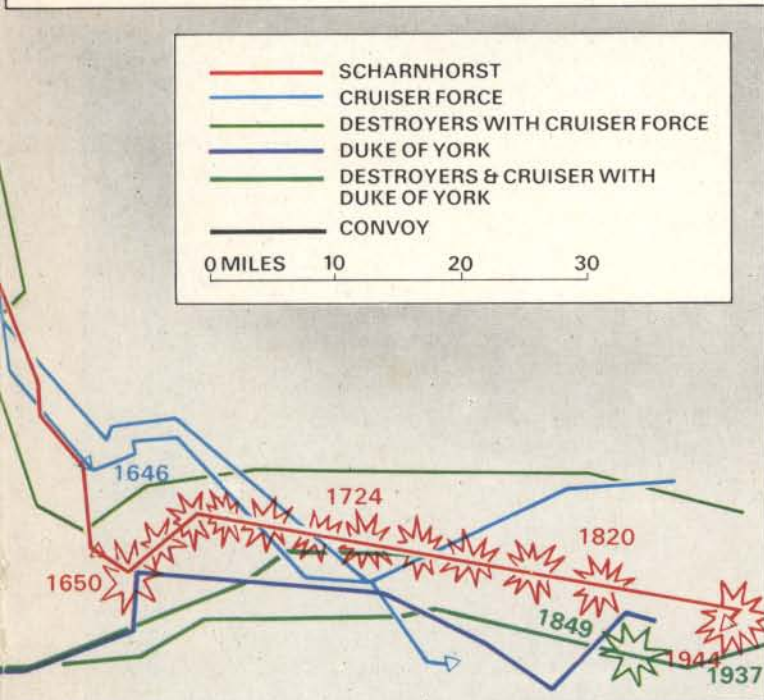
But in *Duke of York*, still some distance from the cruisers, Adm. Fraser had guessed what *Scharnhorst* would do. At 0958 he signalled to Captain McCoy, commanding convoy JW55B's destroyer escort and thus much closer to the cruisers than Fraser, ordering: 'Send four destroyers to join *Belfast*'. For *Scharnhorst* had broken off her action with the cruisers and, with her greater bulk giving her about a





△How the Duke of York's killing power was aided by the German ship lengthening the range. A high trajectory to a shell gives a near-vertical drop. The side armor of the Scharnhorst was thicker than that on the top of the deck and turrets. This allowed the armor-piercing shells to smash through and create terrible destruction below deck. At short range the same shells were not so effective.

◁Plan of the action off North Cape on 26 December 1943. After the first clash at 0400 and the gun-duel at 1240, Scharnhorst broke away and headed for Norway. But as the short day faded she was surrounded and destroyed.



five-knot advantage in such a sea, was heading north. The cruisers could hope to do little more than shadow her—but destroyers might get close enough to launch a torpedo attack. And once Scharnhorst was slowed down, Duke of York would be upon her for the kill.

The four destroyers sent by McCoy—*Musketeer*, *Matchless*, *Opportune* and *Virago*, commanded by Commander R. L. Fisher—joined *Belfast* at 1024. Adm. Burnett now took his reinforced squadron to a station some ten miles ahead of the convoy, where he hoped Scharnhorst might again be encountered. By 1044, he was forced to tell Fraser that he had completely lost contact with the German battleship. At 1103, Fraser was signalling to Burnett: 'Unless touch can be regained, there is no chance of finding enemy'.

But in the next half-hour, a new report came from the convoy itself; the destroyer *Onslaught* signalled: 'Radar contact at 6½ miles'. The ensuing excitement was quashed by *Belfast*'s signal four minutes later: '*Onslaught*'s contact is me!' Had Bey decided to abandon the attack? Were Scharnhorst's radio operators chuckling as they picked up fragments of the British game of 'hide-and-seek', while their own ship dashed back to base?

The answer came just after noon, when *Belfast* reported: 'Unidentified radar contact, 13 miles'. At 1220, *Sheffield* signalled: 'Enemy in sight'. For although Bey had now received a report of an unidentified vessel, thought to be *Duke of York*, in the area, he had not abandoned his attack. But once again he had run slap into the cruiser screen, now strengthened by four destroyers.

A gun-duel began immediately. The British cruisers opened fire at 11,000 yards, while the destroyers attempted to edge closer in order to launch torpedoes. But visibility was somewhat improved, and so Scharnhorst was no longer 'blind'—and her 11in guns were manned by veterans. Within 20 minutes, *Norfolk* had lost her 8in after-turret and all her radar sets bar one. Seven men had been killed. *Sheffield* had suffered less damage, although enough to put her out of the action with engine trouble. Scharnhorst, according to official German sources, was not hit. The British destroyers, laboring in huge seas, had no chance of launching torpedoes or of doing any damage with their main armament of 4.7in guns.

It is difficult, therefore, to understand Bey's next move. According to Fritz-Otto Busch, whose book 'Holocaust at Sea' claims to be based on interviews with survivors, Bey told Captain Hintze: 'We must get out of this!' and ordered the action to be broken off. Since hits on both *Norfolk* and *Sheffield* had been observed, together with 'straddles' on *Belfast*, it has been suggested by both German and British naval historians that Bey should have fought it out—with a good chance of success.

But it must be remembered that Bey now had reason to believe that *Duke of York* might be approaching. On him lay the grave responsibility of preserving Germany's most powerful active ship. He had been informed that the *Luftwaffe* was grounded by bad weather and, at 1418, he sent his destroyers home for the same reason. It is difficult to blame him for deciding to live to fight another day, to abandon the attack and head for Norway. Scharnhorst's presence in Altenfjord was enough to keep powerful warships tied down to defend the Murmansk convoys. Hitler's unfair verdict, given later, was to accuse Bey of having run away from an inferior force, saying that 'too much thought is given to the safety of our ships, as in the case of the *Graf Spee*'.



With Burnett's cruisers and destroyers dropping astern once more, Bey headed back towards Norway. He believed that he had an excellent chance of escape. So did his crew, for when Captain Hintze announced 'We are returning to base', he was answered by enthusiastic cheers. Had they not damaged two British cruisers without loss to themselves? *Scharnhorst* was a lucky ship!

But *Scharnhorst's* luck had run out. *Duke of York* and her consorts now lay across her homeward course, and without forward radar the Germans had no way of knowing what lay ahead. The brief daylight hours were fading. *Scharnhorst* was now more than 400 miles inside the Arctic circle, off Norway's North Cape.

A burst of star-shell, turning night to bright day, came from *Belfast* at 1646—just ten minutes after *Duke of York*, ahead of *Scharnhorst*, had recorded radar contact at 13 miles. One of the destroyer *Scorpion's* officers later recalled: 'I could see *Scharnhorst* so clearly that I noticed her turrets were facing fore and aft. This showed she was not prepared for action. And what a lovely sight she was at full speed. Then, at 1650, she was almost obliterated by a wall of water from *Duke of York's* first salvo . . .'. And each of *Duke of York's* 14in shells weighed 1,400lb.

As *Duke of York's* first salvo scored a perfect 'straddle', including a possible hit, *Scharnhorst's* men again raced to the action stations from which they had been briefly stood

down after nine hours. Even so, it was some minutes before the German battleship was able to bring her guns to bear. And while Bey ordered Hintze to turn northeast at full speed, to break the British ring, both *Duke of York* and *Jamaica* were scoring hits. Fraser had ordered the destroyers to prepare for a torpedo attack—but first *Scharnhorst* must be slowed down by gunfire.

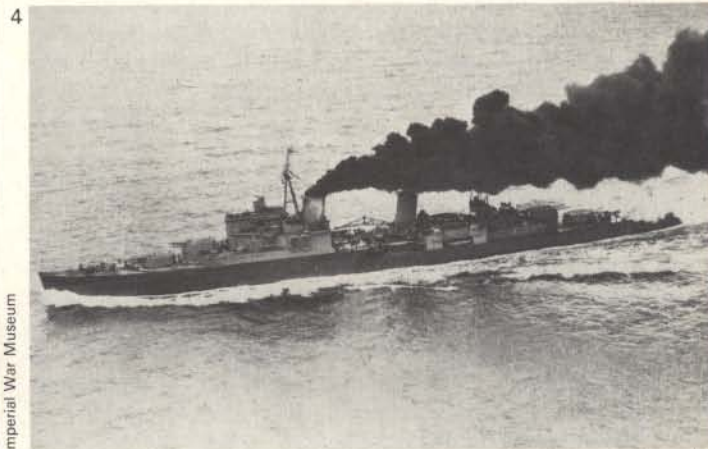
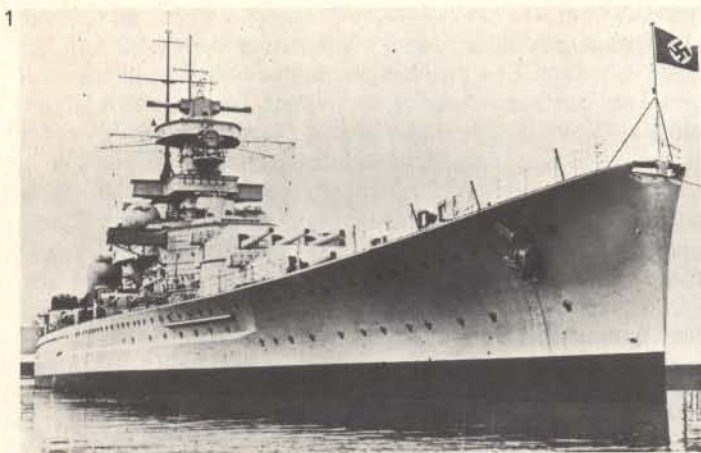
It was almost certainly the 14in guns of *Duke of York* that crippled *Scharnhorst's* forward 11in turret and caused her other fore-turret to cease fire temporarily. Bey signalled to Schniewind: 'In action with heavy battleship.' Schniewind's response was to order all U-boats in the area to concentrate ahead of the convoy (which got through unscathed) or close on *Scharnhorst*. There was little hope of their arrival in time. At 1724, *Scharnhorst* signalled: 'Surrounded by a strong force'.

*Scharnhorst* still had teeth. She drew far enough away from the smaller British ships to engage *Duke of York* alone. The battleships exchanged broadsides at ranges of between 17,000 and 20,000 yards. *Scharnhorst* scored hits on both *Duke of York's* masts, threatening the all-important radar installations with two 11in shells—but both failed to explode. *Duke of York's* aim was just as good—and her ammunition more effective. By 1820 she had fired 52 broadsides, of which no fewer than 31 were 'straddles', including possible hits, and a further 16 were spotted as



Michael Holford Library





1 The German battleship Scharnhorst as originally commissioned in 1937. The straight bows were then given a forward sheer and a clipper rake just before World War II broke out in 1939. This gave the ship an improved performance at high speed in rough seas. But Scharnhorst's triple 11in guns, two turrets in front and one at the rear, were no match for the 14in guns of the British battleship Duke of York.

2 Duke of York on her return to port after the successful battle against the Scharnhorst on 26 December 1943. She lies at anchor while the crew wait to go ashore by the liberty boat, leaving with those first in the queue.

3 Painted in the strange dazzle camouflage of wartime, Belfast steams out from Scapa Flow, British fleet base in the Orkneys. The camouflage was designed to break up the ship's silhouette and mislead an enemy trying to estimate her course. The ship's company are formed up in parade fashion on the decks.

4 Make smoke! As she steams at speed across an easy sea, Sheffield lays a smoke screen, enabling her to retire and break off an engagement, or to make a surprise attack through the smoke. Unless produced deliberately, smoke is a prelude to disaster when spotted by the enemy.

5 Savage, one of the destroyers to finish Scharnhorst off. Stripped for action, her forward turret elevated for AA defense, she works up to fighting speed.

6 The cruiser Jamaica, in camouflage paint, finds a smooth patch in a wicked sea.

◁ Ablaze from stem to stern, her turrets still bravely turned towards the enemy, her guns raised for the last broadside, Scharnhorst begins to keel over. On her starboard side the British destroyers close in to finish off the stricken battleship with torpedoes.





falling within 200 yards of the German ship. Yet *Scharnhorst's* speed did not slacken: the destroyers *Savage* and *Saumarez*, on the port side, and *Scorpion* and *Stord* to starboard, could not close to deliver their torpedoes.

The German ship continued to lengthen the range. Paradoxically, this gave *Duke of York* a better chance of delivering a crippling blow. The closer the two ships were, the flatter the trajectory of their heavy shells—which would tend to strike the thick side-armor rather than the thinner deck-armor. As the range increased, *Duke of York's* 14in armor-piercing shells fell near-vertically on to *Scharnhorst's* more vulnerable decks.

The turning point came between 1830 and 1900. What actually happened is not clear. German sources speak of a torpedo hit on *Scharnhorst's* boiler-room at about 1715, but this is unlikely. The British official history simply states that 'the enemy's guns fell silent and her speed dropped . . . at about 1820 . . . and in the next 20 minutes the destroyers closed to within five miles'. This seems to imply that it was *Duke of York's* fire that crippled *Scharnhorst*.

### Certain of defeat

What is certain is that by 1800 Bey knew that he had lost. Although *Scharnhorst's* 5.9in guns continued to fire on the oncoming destroyers, her main armament was almost completely silent and her speed had fallen to about 10 knots. The German admiral had two alternatives left: to surrender and scuttle his ship, hoping to save the maximum number of lives—or to uphold the honor of the German Navy by fighting to the end. His choice was given in his last signal, sent direct to the German Admiralty and Hitler himself:

WE SHALL FIGHT TO THE LAST SHELL. LONG LIVE GERMANY AND THE FUEHRER. SCHARNHORST—ONWARDS.

At the same time, Capt. Hintze broadcast his last message to his crew: 'I shake you all by the hand for the last time'.

Fraser ordered *Duke of York* and the cruisers to hold their fire as *Savage* and her consorts closed in on the stricken giant. But the battleship was not finished: her 5.9in fire killed or wounded 22 men aboard *Saumarez* and put four of her eight torpedo-tubes out of action. The destroyers still came on, closing to inside 3,000 yards. At that range *Scharnhorst* loomed like a colossus, seeming to fill the whole horizon in the brilliant light of reddish-pink star-shell. A sailor on *Scorpion* remarked: 'Get out wires and fenders. We're going alongside the bastard!'

At 1849 *Scorpion* and *Stord* fired their torpedoes. *Scorpion* claimed one hit, *Stord* none; German survivors' statements give a single hit. But magnificent work by her engineers had brought *Scharnhorst's* speed up to about 22 knots. Perhaps she might still escape into the night. She changed course—only to put herself closer to *Savage* and *Saumarez*, who fired torpedoes (eight from *Savage*, four from *Saumarez*) at 3,500 and 1,800 yards respectively. *Savage* claimed three hits, *Saumarez* one. German sources speak of three in all. *Scharnhorst's* speed fell again to a crawl.

The destroyers withdrew and *Duke of York* and *Jamaica* re-opened fire at about 10,000 yards, while *Belfast* and her consorts kept the target brilliantly lit by star-shell. With the few guns she had left, *Scharnhorst* made a ragged return, throwing shells into the shadows where the British gun-flashes showed her enemies to be lurking. But *Scharnhorst's* men were blinded by the star-shells, choking in the fumes from their own guns and from the fires which were

breaking out all along the decks. Splinters from near-misses cut down men in exposed positions, and one by one her guns fell silent. Bey ordered the torpedo-men to prepare for one last gesture of defiance. Hintze repeated the ship's motto—'*Scharnhorst immer voran*' ('Ever onwards')—as the torpedoes leapt away, but they all missed the British ships.

*Musketeer* and her companion destroyers drawn from the convoy now closed for their own torpedo attack. Three more hits were made. At about 1937, Fraser ordered *Jamaica* to go in and 'finish her off with torpedoes'. Three more hits. At last *Scharnhorst's* crew were ordered to abandon ship. The battleship was blazing from end to end, down by the bows, with a heavy list to starboard, and rolling helplessly the raging sea. Waves were breaking right over her, snatching men from their precarious hand-holds.

The last men to go over her side saw Bey and Hintze still standing calmly on the tilting bridge. One survivor later claimed that many men had refused to leave unless Bey and Hintze would also save themselves. Hintze repeated the order to abandon. 'I've got no life-jacket', said a young rating. 'Then have mine', said Hintze, 'I'm a good swimmer. I'll come afterwards, never fear'.

*Scharnhorst* sank at approximately 1944 hours. She had been hit by at least 11 torpedoes out of 55 fired at her; some 13 shells from *Duke of York's* 14in guns had struck, and at least 12 hits were received from the 8in, 6in and smaller guns of the cruisers and destroyers. A German survivor reported that as she rolled over and sank an officer on a raft called for 'Three cheers for our *Scharnhorst*'.

### Final, triumphant signal

Fraser did not know she had gone. At 1954, after a long silence from *Scharnhorst*, he ordered *Scorpion* in for a searchlight sweep. *Scorpion* reported: 'Lots of wreckage on sea, closing now'; then, at 2012, 'Am picking up German survivors'. At 2015 Fraser signalled: 'Please confirm *Scharnhorst* sunk'. *Scorpion* replied: 'Survivors are from *Scharnhorst*'. Yet again, at 2019, Fraser demanded confirmation of the sinking. This time it was *Belfast* who answered: 'Satisfied *Scharnhorst* has sunk'. But not until 2100 did Fraser feel able to make a triumphant signal to the Admiralty. The Admiralty's answer was: 'Grand. Well done!'

Of *Scharnhorst's* crew of just under 2,000 (including 40 unfortunate teenage cadets on sea-training) only 36 were rescued from the freezing, snow-swept sea. Not one officer was found: it seems probable that many of them had followed the example of Bey and Hintze and had gone down with their ship. For the pitiful remnant of *Scharnhorst's* crew—. . . punch-drunk with their terrible experience', reported one British officer—there was an unpleasant shock when they were transferred from *Scorpion* to *Duke of York*. Adm. Fraser was waiting to receive them aboard—and he bore a striking physical resemblance to Admiral Bey. Many of the rescued Germans were struck into a state of complete mental and physical collapse by this cruel irony.

Both German and British sources are unstinting in their praise of *Scharnhorst's* last fight, and of the care lavished on the few survivors. But Fraser himself was to pay his enemy the greatest honor. Some days later, *Duke of York* passed again through the battle area. While a guard-of-honor presented arms, a large wreath was dropped into the sea.

The action off North Cape was the last great gun duel fought between battleships. It was the end of an era.

Richard O'Neill



# THE 88

Anti-aircraft gun, anti-tank gun, tank gun—in any role, the 88 was a dreaded opponent. But did it deserve its reputation?

Robert Hunt Library/Bundesarchiv





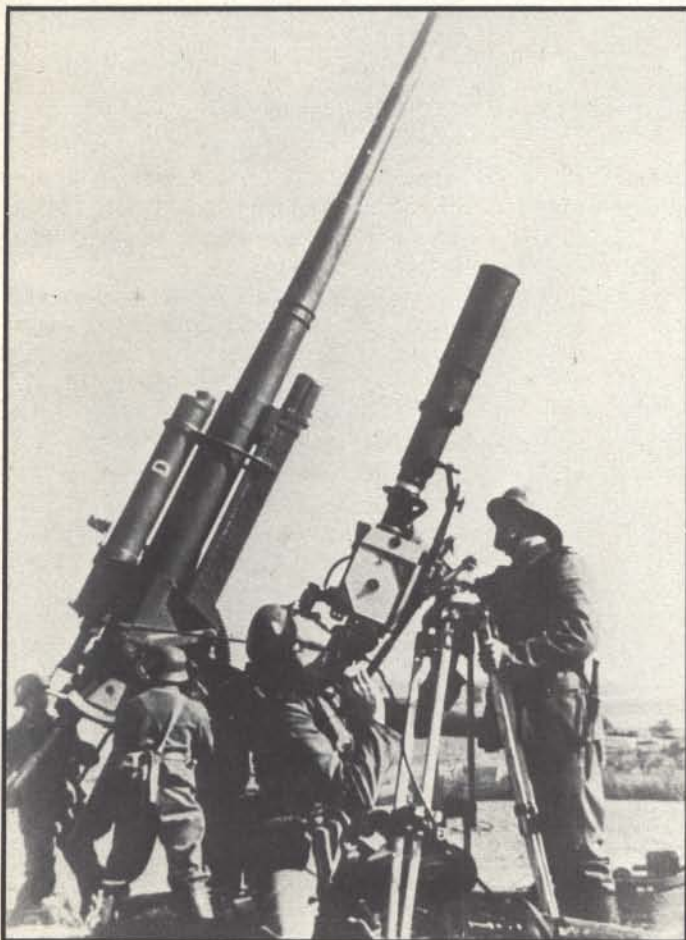
A retired tank commander was once asked what it was like to be clobbered by an 88. 'I can't say', he answered ruefully. 'All I recall is a bloody great bang and someone saying "For you ze war is ofer".'

What was the magic of the German 88mm gun? Was it the all-powerful, shoot-ten-miles-and-throw-rocks-the-rest-of-the-way cannon which legend insists it was? No. When World War II broke out in 1939 the 88 was already six years old—and the original design went even further back.

The 88mm *Flak* 18 was an anti-aircraft gun. It entered service in 1933, having been designed by Krupp technicians on loan to Bofors of Sweden between 1920 and 1930. The Versailles Treaty restrictions had prevented arms manufacture in Germany, which led Krupps to 'exile' their staff instead of sacking them. But when Hitler came to power the German designers in Sweden returned home, bringing with them the plans for an 88mm anti-aircraft gun. There was nothing unusual in the gun's design, except that the barrel was constructed in sections. This enabled a worn area to be replaced without scrapping the serviceable sections. It also

◁(Overleaf) *The 88mm in action in Italy in 1944. As the gun is fired, the crew avoid shattered ear-drums by shielding them with their hands and keeping their mouths open in order to equalize air pressure.*

▽*The 88mm Flak 37. Tested by the German Kondor Legion in Spain during the Civil War in 1936, the 88mm Flak 36 was improved by the addition of better sighting and fire-control systems. As a shell is inserted into the breach, two of the six-man crew operate the high-powered optical instrumentation, which has to be steadied to protect it against concussion as the gun is fired.*



Robert Hunt Library

allowed the gun barrel to be manufactured on mass production lines by non-specialized machinery.

Trials and tests followed and as a result the design was slightly modified, again with mass production in mind, the new model being called the 88mm *Flak* 36. Model 37 appeared after further technical improvements, but the gun's performance was unchanged. It could throw 15 20.25lb shells up to 35,000ft in one minute; and although considered only as an anti-aircraft gun it had a ground range of 16,200 yards.

At the outbreak of war in 1939, three models, the 88/18, 88/36 and 88/37, were the mainstay of German air defense systems at home and in the field, and for the first two years of World War II the standard 37mm and 50mm anti-tank guns served the German purpose well enough. But in 1941 the 88mm suddenly appeared as the tank man's bogeyman in the North African desert. There was no obvious need to use the power of the 88 in this role. The *Wehrmacht* had the 50mm PAK 38, a gun capable of penetrating 96mm of armor at 1,000 yards—quite capable of dealing with any British tank of the time. But the fluidity of desert war favored tank attacks from any direction and the 24 37mm and 50mm AT guns of the division were very thinly spread. It occurred to a bright German officer that the two dozen 88s of the *Luftwaffe's* *Flak* Regiment looked an attractive way of filling the gaps, and since the balance of air power at that time lay with the Germans they could afford to take a number of the anti-aircraft guns and disperse them across the divisional front as anti-tank weapons.

### Spanish testing ground

The idea sounded attractive, but it would not have been possible unless the 88 was suited to the task; a high-velocity projectile alone does not make an anti-tank gun. It needs the proper sighting system and—most important—it needs the correct ammunition. In the case of the 88 both were available. This was due to a policy decision based on German experience in the Spanish Civil War in 1935. During this conflict the *Luftwaffe* sent a *Kondor* Legion of pseudo-volunteers, partly to support General Franco and partly to test new equipment and theories—and with the Legion went a number of *Flak* 18s to provide airfield defenses. The gun's value as an anti-aircraft weapon was proved, and its capability as a field or anti-tank gun in emergency was also realized, and steps were taken to provide it with an optical direct-fire sight and an anti-tank armor-piercing projectile.

This decision was applauded by military observers who urged the supply of anti-tank ammunition for every gun on the battlefield, since tanks were liable to rove about, evade the specialist anti-tank weapons, appear in front of field guns and make a nuisance of themselves. As a result, it became standard German practice to provide every gun with an anti-tank projectile of some sort for use in emergency.

The policy of using the 88 in a ground role appears to have been officially established by the Germans before World War II broke out. In 'Procedures for the Attack of Fortified Defensive Positions', issued in Germany in the summer of 1939, it is ordered that 'further assault detachments, closely followed by anti-tank and 88mm guns, will be thrust through any gap in the defensive front'. An interesting point here is the distinction between 'anti-tank and 88mm guns': the matter was not elaborated upon, but it points directly to the potential of the 88 as an assault gun. But these plans lay dormant until the situation in North Africa revived it.





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*Against a backdrop of Tunisian mountains, an 88mm crew prepare to go into action. The famous gun had a rate of fire of 15 rounds per minute, and the crew had to move fast*

*once a shell had been fired. An MG42 machine-gun lies to one side in case of a sudden infantry attack, when the Germans' 88 would be useless at close quarters.*

The first appearance of the 88 as an anti-tank gun was on 14 April 1941, when Australian infantry outside Tobruk reported a number of 'long-barrelled guns on strange carriages' during an attack. These guns had been brought up behind attacking German infantry and they sat there without joining the fight. Were they waiting, in accordance with the 'Procedures', to be 'thrust through any gap in the defensive front'? On that occasion no gap appeared, and the guns were withdrawn. Their next appearance was more decisive, when a battery was dug in at Halfaya to form the nucleus of the German defense there.

Digging-in was vital to the survival of the 88. Up to this point the largest anti-tank gun on the battlefield was the 50mm PAK 38. To the top of its shield it was 3ft 7½in high, which made it easy to conceal behind the nearest patch of desert scrub. The 88 *Flak* 18, on the other hand, was a towering 6ft 10½in when in action, and due to its platform and four stabilizing outriggers it needed a pit 19ft long by 17ft wide for concealment. This meant damned hard work for the detachment who had to do the digging. But concealed the 88s were; and while some German commanders thought the guns should be kept to the rear because of their bulk and conspicuousness, their gunners thought differently. A British report in May 1942 said: 'The use of the 88mm gun in the boldest possible manner had a considerable effect . . . the gun was often moved into position, particularly on the flanks of armored formations, to

within 1,500 yards of our tanks . . . the damage they did was considerable.' Another report said 'Experience shows that when dug in on a forward slope these guns are extremely difficult to detect at 1,000 yards range.'

German siting of the 88 was usually unorthodox, and 'dummy' guns were built from scrap wood and canvas to confuse the Allied spotters. A British gunner officer, writing in the 'Journal of the Royal Artillery' of his experiences in 1942, described a German/Italian defensive position which had been abandoned after the battle of Alamein. 'The siting of anti-tank guns was particularly interesting . . . the Italian guns were placed with a complete disregard of the principles . . . a good long field of frontal fire seemed to be the sole aim. To get this, the guns were dug in on top of commanding little mounds or on the crest of little ridges. It was not good craftsmanship.

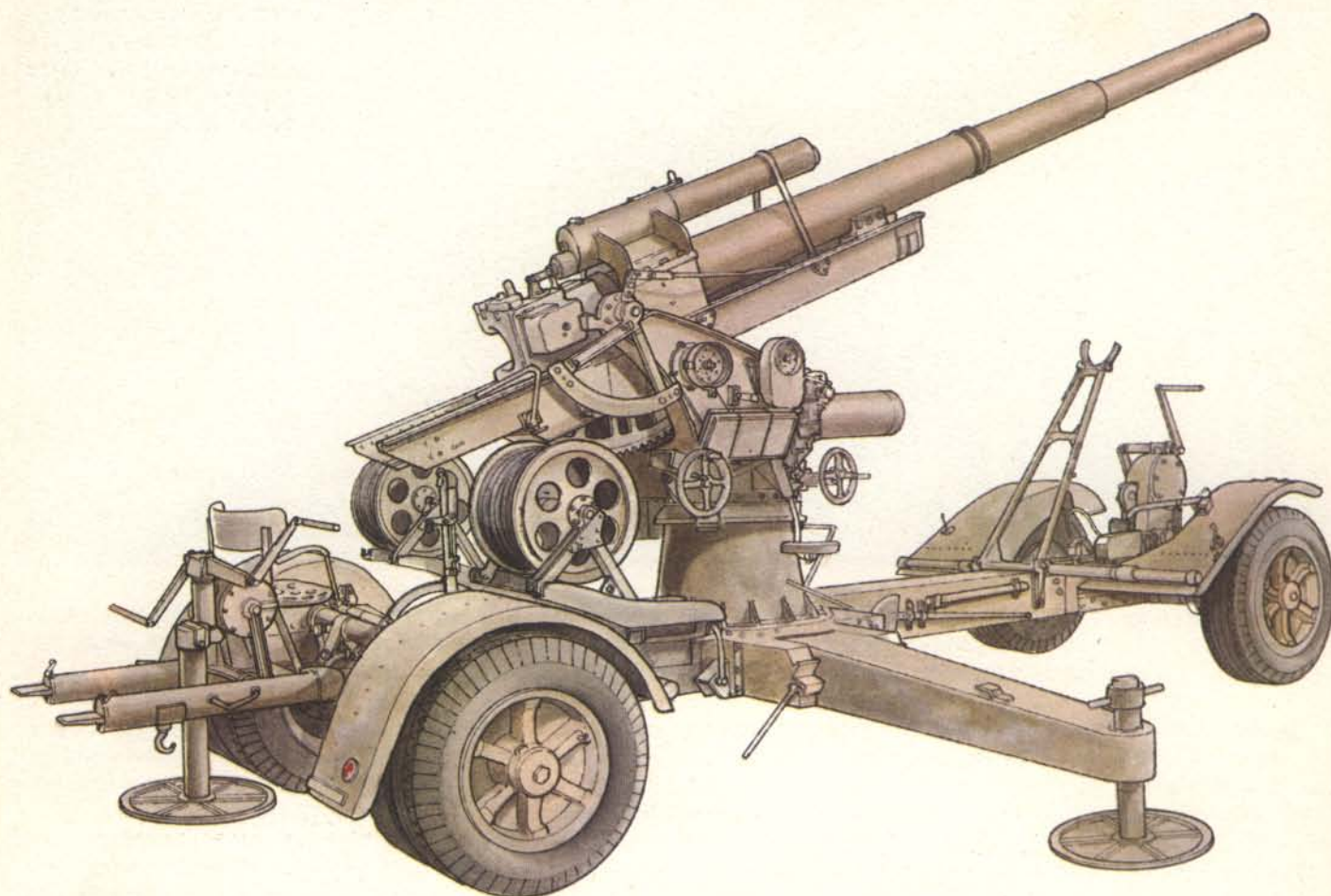
'The 88mm was a complete contrast. Certainly their field of fire was mainly frontal, as was justified by the power of the weapon, but they were very skilfully sited and concealed, and very boldly sited too. Close to the minefield and right in the perimeter of the wire, they would have got a large bag of tanks and would have been difficult to round up with infantry. A further point of interest lay in the dummy guns . . . the construction was crude but ingenious, their siting much more in accordance with our idea of defilade and limited fields of fire.' In other words, where the British Army expected to find anti-tank guns they wasted their ammunition on



The standard AA version of the 88mm Flak gun 18, as developed by Krupp's designers in 1932. With models 88/36 and 88/37 it was the basis of the German air defense systems. Its future was assured when its ability as an AT gun was proven, and its reputation lasted from 1939 to the end of World War II.

The 88mm: performance compared with British American and Russian guns

	Germany	Britain	USA	Russia
	88mm	3.7in	90mm	85mm
Ceiling	34,770ft	41,000ft	32,000ft	27,500ft
Velocity	2,690ft/sec	2,600ft/sec	2,700ft/sec	2,625ft/sec
Shell weight	20.25lb	28lb	23.4lb	20.24lb
Ground range	16,200 yards	20,600 yards	18,980 yards	16,950 yards
Rate of fire	15 rpm	15 rpm	15 rpm	15 rpm



Peter Satson/Tony Bryan

wooden dummies—while the real 88s were concealed in unorthodox places.

By the time of the Battle of Alamein the *Afrika Korps* had 86 of these weapons cleverly deployed in the anti-tank role. This, and their accuracy, established the myth of their super-efficiency. The anti-tank shell, which carried a small charge of explosive to detonate after penetrating, could crack open 108mm armbr-plate. This deadliness was effective even when striking at an angle of 30° at 1,100 yards range: a formidable performance, particularly when there was no British tank at that time with more than 80mm of armor protection. And the 88 could penetrate 90mm at 2,200 yards, which meant no British tank was safe at under that distance, at which range the tanks were quite powerless, for their two-pounder and, later, six-pounder guns were not provided with high explosive shells.

The situation remained fraught until the arrival of the US-built Lee-Grant. This tank, weighing only 28.5 tons, carried a sponson-mounted 75mm firing high-explosive

shells. The success of this tank led to a change in British tactics and high explosive shells were supplied for all tank guns.

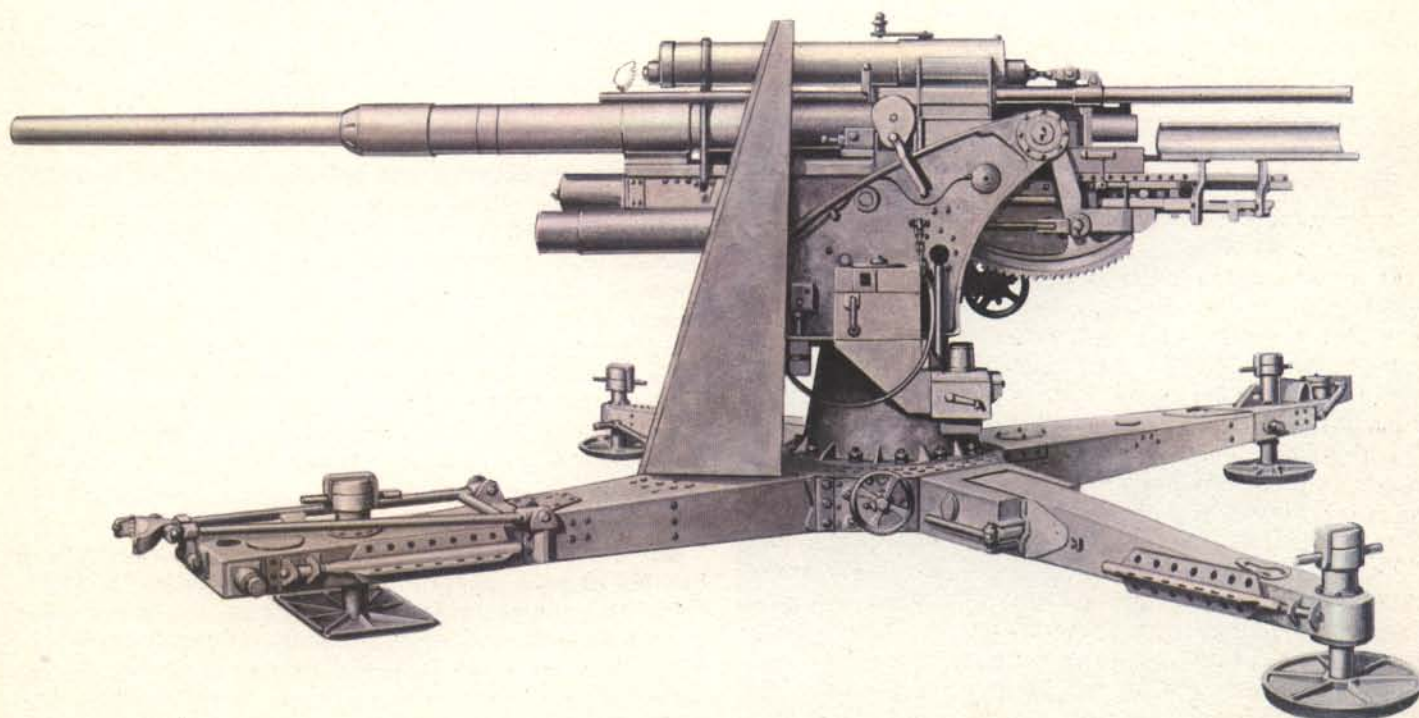
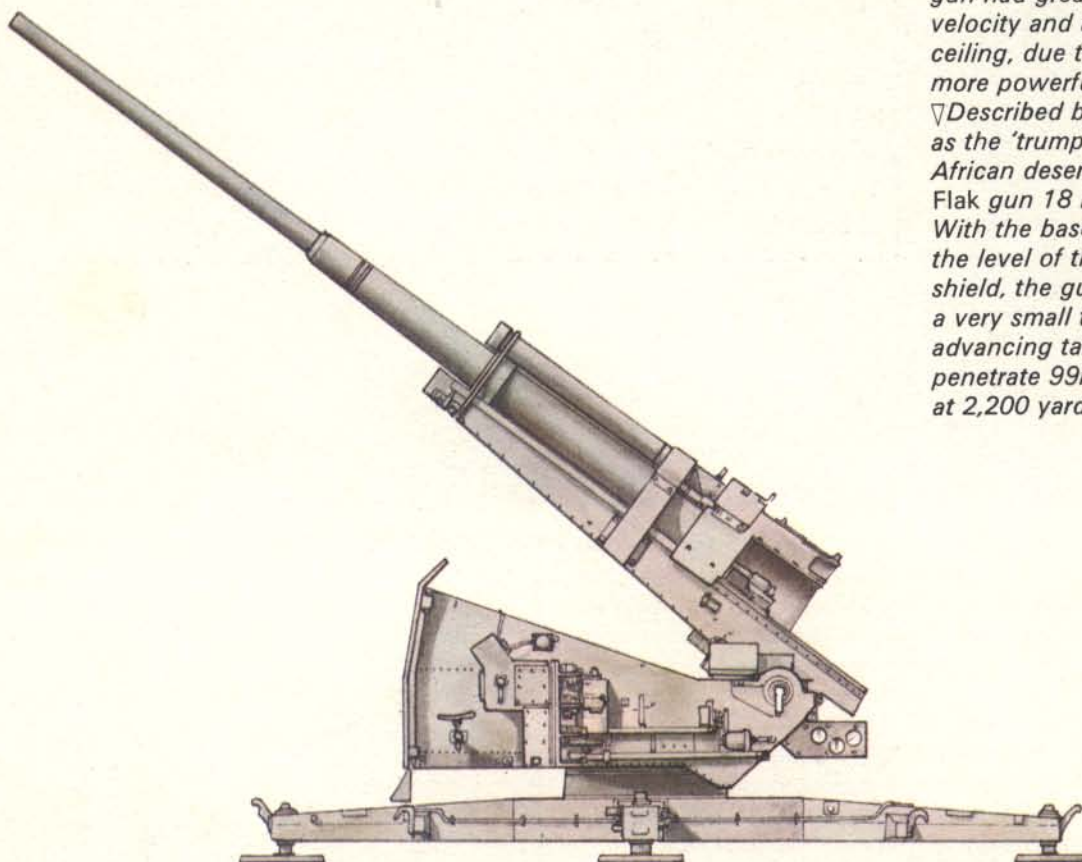
For all its efficiency in tank warfare, the 88 remained an anti-aircraft gun. And the *Luftwaffe* commanders were angry when they found that 88s taken for anti-tank work were not returned. In theory, the guns were returnable on demand—in practice a loaned gun was a gun lost to the *Luftwaffe*. Anti-aircraft equipment, such as data transmission dials and fuse setters, was taken off and lost, sights were modified, unofficial shields were fitted. And when—and if—the anti-aircraft units ever saw their 88s again, a brief and horrified look resulted in their return to a workshop for reassembly to their proper specification.

On one occasion, in June 1942, the British Army used its 3.7in anti-aircraft gun in a similar manner. The 2nd Regiment, Royal Horse Artillery suddenly found itself supplied with four 3.7in AA guns for anti-tank use. But this gun was less adaptable to the AT role than the 88. Technically the

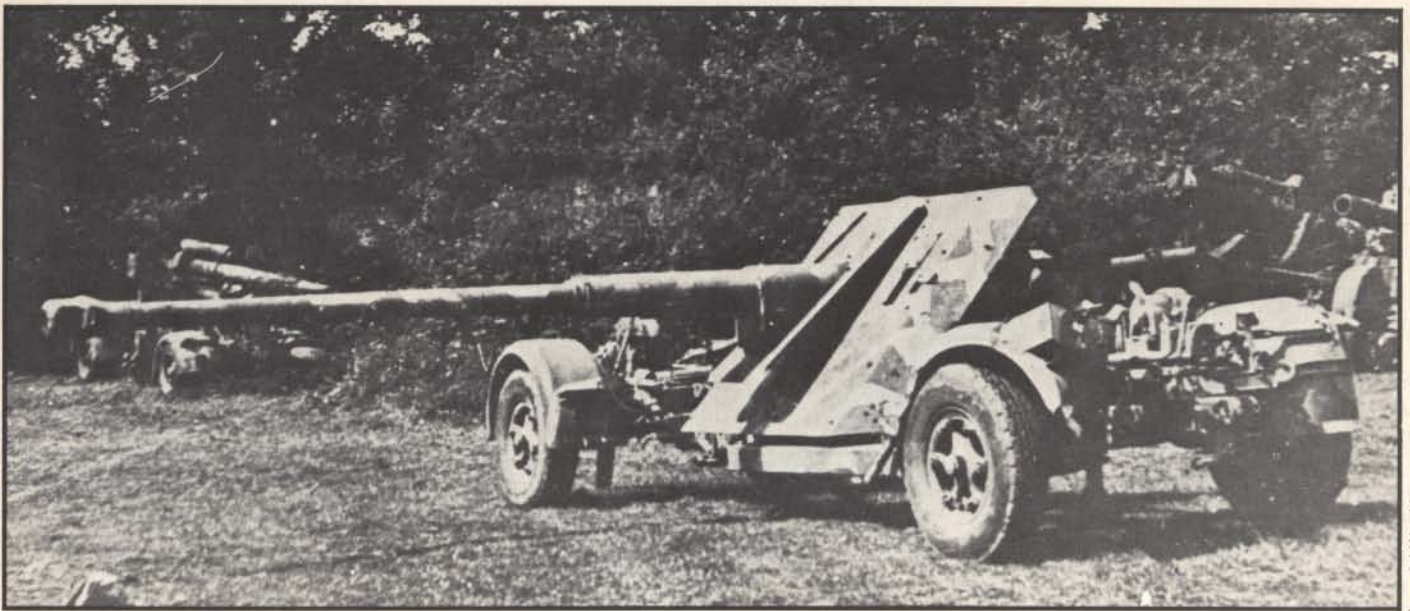


◁The improved Rheinmettal-Borsig 88mm Flak 41. Produced in 1943, the gun had greater muzzle-velocity and a higher ceiling, due to the use of a more powerful cartridge.

▽Described by Ian Hogg as the 'trump card of the African desert'—the 88mm Flak gun 18 in its AT form. With the base dug-in to the level of the armor shield, the gun presented a very small target to advancing tanks and could penetrate 99mm of armor at 2,200 yards.







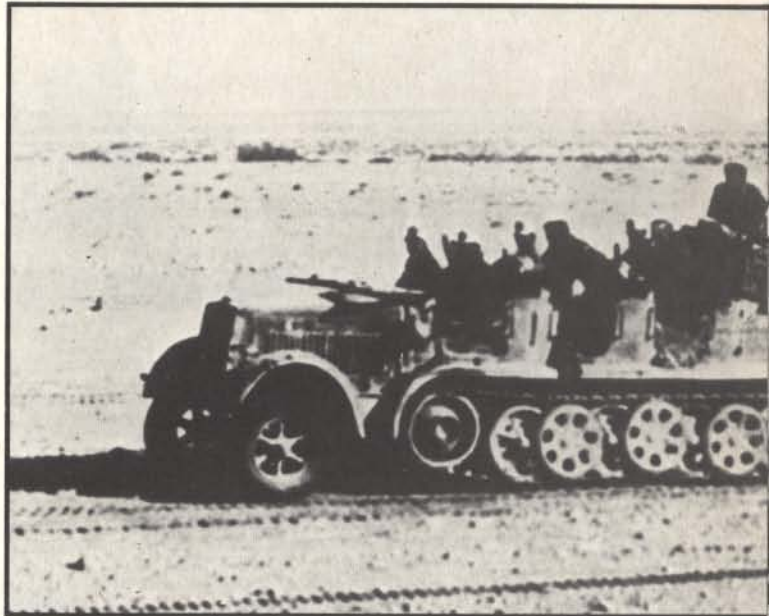
Imperial War Museum

3.7 was a more advanced weapon, intended for use with data transmission and remote power control systems and with no suitable sights for ground work. The gun weighed two tons more than the 88 and it was bigger. In addition, the area allotted to the 3.7s was no more than a depression in

△ This model of the 88mm, the PAK 43 (an improvement on the PAK 41) is mounted on a travelling chassis. When the wheels were detached a turntable allowed the gun a 360 degree traverse, a much lower silhouette and gave a flatter trajectory to the armor-piercing shells. A similar version of the 88, on the standard two-wheeled artillery gun-carriage, was known as the 'Barndoor'.

▷ A half-track, with gun-crew, towing an 88mm AT gun across the stony plain of the North African desert. As an experiment, the gun itself was sometimes mounted on a 12½-ton half-track, but the version did not prove successful.

▽ A gun-crew, with extra help, struggles to maneuver the 88mm into position. Allied reports clearly showed how cleverly the German 88s were sited.



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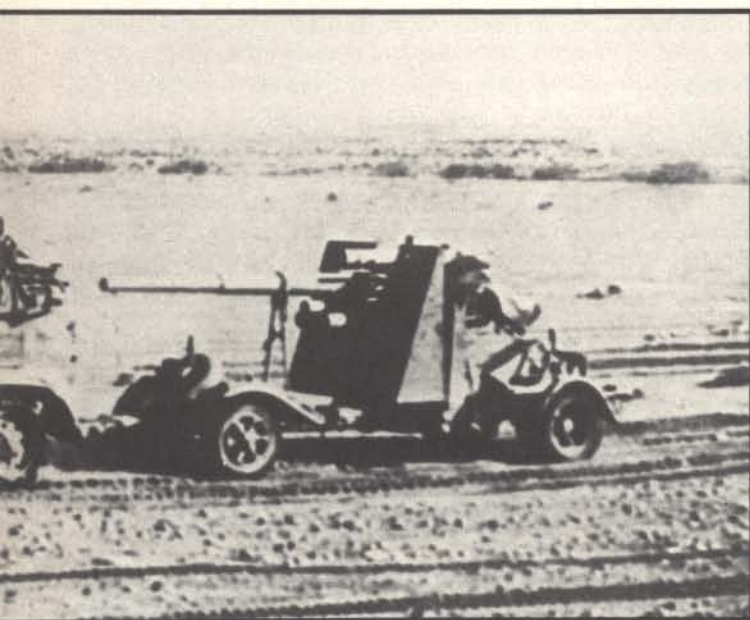
the desert half a mile long by a quarter-mile wide, and already bursting at the seams with four Guards companies, three field gun batteries, one anti-tank battery and two light anti-aircraft detachments. This led the commanding officer of 2nd Regt. RHA to send two of the guns away. His position was never attacked, and the guns were eventually removed from the battle area. That was the first and final appearance of the 3.7in AA gun as an anti-tank weapon. The biggest factor was one of availability and priorities; to have any appreciable effect, large numbers of 3.7in guns would have had to be deployed, and to do this they would have had to be stripped from the defenses of the Suez Canal and Alexandria, a dangerous suggestion with the strength of Axis air power at that time. The gun crews would have needed extensive retraining, too.

But the potency of the 3.7in was recognized; it was capable of penetrating 117mm of armor at 30° at 1,000 yards. This was slightly better than the 88, and so the barrel was taken as the basis of a 32-pounder anti-tank gun. It was to be a weapon of fearsome performance but equally fearsome bulk, and was under development when the war ended in 1945.



The only gun on the British side at all comparable with the 88 was the 25-pounder, which by a strange coincidence was 87mm in calibre. This was no more intended to be an anti-tank gun than was the German 88, but it was a field gun and much better suited to anti-tank shooting in many respects. Its anti-tank projectile was a 20lb steel shot, lacking the explosive filling of the 88's 21lb shell and, due to the lighter construction of the gun and small cartridge, it could only achieve a velocity of about 1,800ft/sec, giving a penetration figure of 80mm at 1,000 yards.

By the time the desert campaign had proved the worth of the 88, the Russian campaign was under way, and the unexpected appearance of the Soviet T34 tank had made many of the German anti-tank guns look ineffective. The only answers were either a heavier gun than the 50mm PAK 38 or the liberal provision of tungsten-cored ammunition. This could withstand higher striking velocities and ensure penetration where steel shot might fail, but the supply of tungsten to Germany from its dwindling sources in Eastern Europe was precarious and eventually was reserved for machine-tool production. A 75mm gun was



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hurried into service, but the 88, too, took on new importance. Krupp were asked to produce a solely anti-tank version, known as the 88mm PAK 43.

This gun flew in the face of accepted ideas—and got away with it. Instead of the two-wheeled split-trail carriage then considered necessary for quickness into action, the Krupp design was a four-legged platform based on the normal anti-aircraft gun pattern, but enabling the gun to fire from its wheels in an emergency. This was sensible, for AT guns were largely sited for defense, and rapid call to action when on the move was uncommon. The cruciform platform gave the new 88 a 360° traverse—a desirable anti-tank feature. And since this design was not intended for AA work the gun was not so high, barely 5ft to the top of the shield.

The gun's performance was improved by enlarging the chamber and developing a bigger cartridge. But the advanced carriage design led to manufacturing problems and delays, and in an attempt to get the guns into action quickly a two-wheel carriage was improvised, using stock components from other weapons. The result, which was clumsy and heavy, was officially known as the 88mm PAK

43/41. The troops who had to push it through the Russian mud nicknamed it 'Barndoor'. Even so, there was nothing wrong with its performance: it could defeat 168mm of armor at 30° at 1,100 yards range, and even at 3,300 yards the shell still had more power than the original 88 had had at 1,100 yards.

Reports from the Eastern Front were unanimous in its praise: 'The accuracy is very good at ranges up to 2,200 yards. Tanks have been knocked out at ranges from 160 to 3,300 yards.' Another report said: 'On being hit the tanks showed a darting flame three metres high and were burned out. Turrets were mostly torn off and knocked away. A T34 was hit from the rear at a range of 450 yards and the engine block was flung out for a distance of six yards.' One troop commander reported defeating six T34s at 3,900 yards range.

But there were drawbacks. The new cartridge developed an intense smoke cloud which, in calm weather, tended to hang around the muzzle for about 20 seconds and obscured the gunlayer's vision. A worse defect was that the long barrel tended to vibrate under high rates of fire, and due to this its accuracy went seriously astray. But provided the rate of fire was kept down to 15 rounds a minute or less—and with one shell weighing 51lb, this rate would be unlikely to be kept up for long—the accuracy was, according to one *Panzer* Division report '... splendid; a wonderful gun. With four of these, 12 tanks out of 20 were knocked out.'

#### Normandy: the 88 was waiting

When the Allies landed in Normandy in 1944 the 88s were waiting: not only the *Flak* 18 and PAK 43 but a third version, the 88mm *Schiffskanone* C/35 in *Unterseebootlafette* C/35. This 88, a naval gun used in coast defense, was unrelated to the other two weapons and had a much inferior performance; it is interesting only to exemplify how 88s came in a variety of shapes and sizes.

By this time, too, the 88 was a standard tank gun. Its threat was greater than it had been as an *anti-tank* gun—now, the 88 could come looking for you. But by this time also, the Allies were in a better position; their tank armor was thicker—though still not thick enough to survive a short-range encounter with an 88. And their tank and anti-tank guns were of equal or greater power.

The anti-tank 88 no longer had the built-in advantage of range; at distances where the gun could damage an Allied tank, the tank could—and often did—get in first and knock out the 88. And where the 88 was itself tank-mounted, the superior penetration of the tungsten-cored ammunition of the British 17-pounder and US 90mm brought the contest down to much more level terms. The 88 still had a powerful punch, as many an Allied tank commander learned, but it was no longer a 'super-gun', although much of the myth remained until the war ended.

In summary, the potency of the 88 was that it was present, in reasonable numbers, when it was needed. 'They' had them, 'we' didn't. And anything an enemy has which makes life unpleasant for you tends to earn a larger-than-life reputation.

The 88 did not die; like all good old soldiers it just faded away. At the end of the war vast numbers were still serviceable, and many Eastern European countries obtained them cheaply to form the nuclei of their post-war air defenses. There they remained until the early 1960s, when supplies of Soviet missiles gradually replaced them.

Ian Hogg



# KASSERINE

**New to the desert, new to war, these young Americans faced the fury of a cornered 'Desert Fox'. It was a bloody initiation**

When General Dwight Eisenhower, Supreme Commander of the Allied Forces in French North Africa, visited his troops in central Tunisia on 13 February 1943, it seemed that the campaign in North Africa had reached a stalemate. Since the Operation Torch landings, on 8 November 1942, the Allies had secured the support of the French in North Africa and occupied Morocco and Algeria, but the winter rains and the unexpectedly quick German build-up prevented them from overrunning Tunisia as well. Farther east the Eighth Army under General Bernard Montgomery had defeated Field Marshal Erwin Rommel's German-Italian *Panzerarmee* at El Alamein and steadily pushed it out of Egypt and Libya. Rommel was now at Mareth in southern Tunisia, waiting for Montgomery's next offensive. Between Rommel's *Panzerarmee* and Fifth *Panzer* Army under Colonel-General von Arnim in the north lay a narrow coastal plain vital to the supply of Rommel's men, who were dependent on the port of Tunis.

Earlier in the campaign the Allies had threatened to cut the road to Tunis, but small attacks by von Arnim had driven them out of most of the passes between the mountains and the Mediterranean. Now General Anderson, commander of the First Army in Tunisia, correctly interpreting the plans of von Arnim, believed that the main German thrust would come in the north, against the British 5th Corps. But he underestimated Rommel's flair for the unexpected.

Rommel himself was tired and ill. He had returned from sick leave to meet the Alamein attack but had failed to check the British advance. This cost him the confidence of *Comando Supremo* in Italy and of Hitler; they decided that Rommel should return to Germany as soon as his withdrawal to the Mareth Line was completed. However, Rommel still had enough of his old energy to propose that his army and that of von Arnim should combine in an attack on the First Army before Montgomery could pin him down in the south.

Rommel hoped to penetrate the ridges of the weakly-held Eastern and Western Dorsales and threaten the Allied supply dumps at Tebessa. His plan was favorably received by *Comando Supremo* in Italy, which was anxious for victory, but von Arnim was less optimistic. Kesselring, the German Commander-in-Chief South, held a series of conferences with von Arnim and Rommel, which led to a modified operational plan. Von Arnim, with two *Panzer* divisions, would mount Operation *Fruehlingswind* against Sbeitla. If this was successful, one division would combine with mobile elements of the *Afrika Korps* (the German armored elite of the *Panzerarmee*) to attack Gafsa (Operation *Morgenluft*). The basic aim was to cause the Allies heavy casualties and so delay their own offensive, but Kesselring was insistent that 'we should not lose from sight the large operation envisaged towards Tebessa'.

Eisenhower did not know the German plans, but he was still disturbed by the dispositions of the American 2nd



Kasserine—the American view south. Under 800 yards wide at its narrowest point, the pass divides the rocky scrub of the Foussana Basin (foreground) from the Plain of

Sbeitla. A narrow-gauge railway crosses the River Hatab. On the left is the Djebel Semmama hill scaled by the Germans. Beyond lie the 4,500ft mountains of the Eastern Dorsale.



Corps, which held the V-shaped area between the Eastern and Western Dorsales. The most important part of the corps, 1st Armored Division, held such a broad front that it was scattered in small packets and had no real reserve. The division itself had reached Africa only partially trained, and had had neither training nor battle experience since landing. Eisenhower was also worried about the corps commander, Fredendall, whose headquarters were tunnelled deep into a ravine near Tebessa, far from the front line. Despite this Fredendall kept a tight grip on minor units, even by-passing 1st Armored Division's commander, whom he disliked. One consolation was that his troops were well equipped, on a scale unknown to the Axis forces. The Germans might have some new weapons, such as the Tiger tank, or the *nebelwerfer* rocket projector, but not in sufficient numbers to give them any significant advantage.

Nevertheless, the Allies were caught completely off balance on 14 February when the 10th and 21st *Panzer* Divisions advanced from Faïd. Facing them was Combat Command A (CCA) of the 1st Armored Division and the 168th Regimental Combat Team, who held two hills, Djebel Lessouda and Djebel Ksaira, with a reserve in the nearby town of Sidi bou Zid. While 21st *Panzer* Division drove south to outflank the position through another mountain pass, 10th *Panzer* Division struck directly at the Americans. A high wind muffled the sounds of the German approach and Djebel Lessouda was soon isolated. CCA's reserve of about 40 tanks and a company of tank destroyers under Colonel Hightower moved out to meet them, but was halted and outnumbered by the German armor, which included some Tigers. Hightower's radio operator described the clash:

'We hadn't gone very far when we ran into blistering fire from many guns, including, I suppose, a lot of 88s. I didn't see too much and didn't know much about what was going on, but I did see many of our tanks get hit. Sometimes two or three men got out. Sometimes no one got out. Most of the tanks burned when hit. The artillery got so hot and heavy, and we were losing so many tanks due to being outranged, that the Colonel decided to withdraw. So we start backing out, keeping our thickest armor toward the enemy. The Colonel told Clark to back and zig-zag, and when we reached a suitable place, to turn fast and get going. I remember that two men jumped on our tank to ride out of the battle area—but I guess we were moving too slow for them because pretty soon they jumped to the ground and took off on foot'.

### One tank against 'supermen'

Meanwhile the headquarters and support elements of CCA left Sidi bou Zid under heavy air attack. If the German plan had worked perfectly they would have been cut off by 21st *Panzer* Division, but it had been delayed on the journey through the mountains. It did arrive in time to meet Hightower's command tank as it brought up the rear of the American column. There were no other tanks in range.

'The Colonel then said we would just have to take them on by ourselves. He immediately rotated the turret until the 75mm gun was pointing over the left rear fender at the German tanks. I don't remember when I first found out that there were seven of them . . . But anyhow, Corporal Bayer, the gunner, started firing at them. Col. Hightower was observing the fire with field glasses. I could hear him complimenting Bayer on getting hits. Clark, the driver, was craning his neck trying to see the action. Agee, the loader,



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**1** Major General Ernest N. Harmon served under Patton in Morocco and was sent by Eisenhower as a 'useful senior assistant' to the squabbling generals of 2nd Corps. In fact, Harmon ran the battle from 23 February onwards, ordering Irwin's guns not to withdraw from Thala and rushing 48 new Sherman tanks to the wavering front.

**2** Field Marshal Erwin Rommel hoped to capture Tebessa and drive to the Mediterranean while Montgomery halted.

was busy keeping the 75 loaded. All the time we were firing at the "Supermen" they were not wasting any time. We were getting it hot and heavy. I did not keep the count on them, but we received many hits on our tank. I could feel the shock and hear the noise as those projectiles bounced off'.

Hightower's tank was eventually knocked out, but its crew escaped. When they rejoined the battalion they found that only seven tanks remained. Forty-four had been lost and the Germans had also destroyed 15 guns with many half-tracks and other vehicles. Over 2,000 men were marooned on Djebel Lessouda and Djebel Ksaira.

The remnants of CCA rallied at a crossroads on the Sidi bou Zid-Sbeitla road, where they were joined by a battalion of infantry under Colonel Kerns, after whom the crossroads were named. First Army was still sure that the main attack would be in the north, so reinforcements were limited. However, they did include a battalion of tanks under Colonel Alger, who was ordered to prepare an attack on 15 February to restore the situation at Sidi bou Zid and release the trapped troops. At 1240 the force moved off in a rough arrowhead formation, led by Alger's tank. On the flanks came tank destroyers and behind were a battalion of infantry, with another battalion of self-propelled (SP) guns.

The advance was quickly sighted by the Germans. A number of air attacks delayed the advance while the two *Panzer* Divisions prepared an ambush. This was sprung when Alger was about two miles from Sidi bou Zid. Checked by a line of anti-tank guns, the Americans soon found their flanks threatened by superior tank forces. The infantry and artillery managed to escape—though not without casualties—but only four tanks returned that night. In all 46 tanks were lost, with 130 vehicles and nine SP guns: in two days fighting 1st Armored Division had been severely mauled. Two of its three tank battalions had been almost completely destroyed—not necessarily because of poor equipment or training, but because they had been committed piecemeal against a stronger enemy.

The seriousness of the situation now came home to Gen.



Anderson. Gafsa had been evacuated with a fight but with some signs of panic on 15 February, and so the Eastern Dorsale defense line had been completely abandoned. Anderson ordered a gradual withdrawal to the Western Dorsale while he hurried reinforcements to meet the growing threat to his southern flank. The garrisons at Djebel Lessouda and Djebel Ksaira were ordered to break out. Those on Djebel Lessouda decided on a policy of boldness, and walked through the German lines during the night of 15/16 February. Nearly 300 escaped, but when the Djebel Ksaira troops tried to do the same on the following night they were unable to reach the American lines before daylight. After a determined fight 1,400 of them were rounded up by the Germans.

In spite of Allied fears, the Germans made no real attempt to exploit their gains on 16 February. In the south Rommel would not move towards Feriana until von Arnim attacked Sbeitla, and it was not until evening that he ordered a cautious advance on the town. Von Arnim saw no need to hurry because he had always intended the operation to be a limited one. He moved 21st *Panzer* Division towards Sbeitla but turned 10th *Panzer* Division north towards Fondouk. This proved to be a crucial decision because it took 10th *Panzer* Division out of the battle for three days.

During the night of 16/17 February German infiltration disorganised the withdrawal of Sbeitla and some units undoubtedly pulled back with undue haste. There was no real panic, only a nervousness which is well conveyed by this account of the next day from a gunner whose battery was sited just behind Sbeitla:

#### Scattered wildly

'We were no sooner ready for firing when a German plane dived down on us while trying to escape from two American planes attacking it . . . I mention this because we were all shaky after the battle of the night before, because we had little or no sleep and because we had lost quite a few men, and the plane diving on us so unexpectedly panicked us for the moment. We all scattered wildly. This is one of the few positions where we did not unload any ammunition because we were afraid any minute the Germans would be jumping on us . . .

'The road that ran into Sbeitla was very near our position and we could see part of it. I remember our army pulling back to regroup. There was no order here in the sense that units moved as a whole; it was strictly a "hodge-podge" affair. One truck would go by with a few men in it, another with whatever equipment it could find, jeeps, half-tracks, anything that still ran under its own power was used to haul out whoever and whatever it could find. I suppose they were regrouped somewhere and shipped back in again'.

During 17 February Sbeitla was abandoned; Rommel realized that the limited objectives of *Fruehlingswind* and *Morgenluft* had been achieved. Gafsa, Tozeur, Feriana, Thelepte, Sidi bou Zid and Sbeitla were in German hands. But Rommel saw a greater opportunity. As he put it:

'The Americans seemed to be pulling back to Tebessa. Their command appeared to be getting jittery and they were showing the lack of decision typical of men commanding for the first time in a difficult situation. Now that the operation had gone successfully for four days, I wanted to push forward with all our strength to Tebessa, take possession of this important airbase, supply and transport centre, and strike deep into the Allied rear'.

Von Arnim was opposed to this plan but Rommel

appealed to *Comando Supremo*, which was struck by the idea of making further gains. Early on 19 February it ordered:

'With all available mobile troops of the German-Italian *Panzer* Army and 10th and 21st *Panzer* Divisions under command, F. M. Rommel, concentrating his forces and strongly protecting his west flank, is to advance from the general line Sbeitla-Tebessa-Maktar-Tadjerouine, with El Kef as his first objective'.

#### Disastrous consequences

'Group Rommel' was formed to command this operation but Rommel was given no direct authority over von Arnim—an omission that was to have disastrous consequences. An even bigger mistake was *Comando Supremo's* injunction to strike north towards El Kef. This was exactly what the Allies expected Rommel to do, and if he had been allowed to attack Tebessa he would certainly have caught First Army on the wrong foot. There was considerable ambiguity in *Comando Supremo's* orders; the start line was not a line but a quadrilateral, mostly held by the Allies, and it included Tebessa. A year ago Rommel might have used this ambiguity to carry out his own plan, but now, tired of his superiors' distrust and interference, he obeyed the letter of his instructions. The *Afrika Korps* detachment was to attack the Kasserine Pass: 21st *Panzer* Division to capture Sbiba; 10th *Panzer* Division, now returning from Fondouk, would reinforce whichever unit had more success.

While these decisions were being taken there was a lull in operations which the Allies used to reinforce their forward troops. Sbiba was quite strongly held, but at Kasserine there were only 2,000 men. They were a mixture of infantry, engineers and artillery named Stark Force after their commander, Colonel Stark, who had been told by Fredendall to 'go to Kasserine right away and pull a Stonewall Jackson' (a reference to Jackson's last-ditch stand which enabled the Confederates to win the first battle of Bull Run in the American Civil War).

Rommel's attack began on 19 February with a surprise assault by reconnaissance troops. When this failed two battalions of the *Panzer* Grenadier Regiment 'Afrika' were sent into the Pass. Major Heinz Werner Schmidt describes the advance towards the Americans:

'My company was formed up in a few minutes. At mad speed we roared through a meadow, through gullies and over rocks, towards the hill dominating the pass on the right.

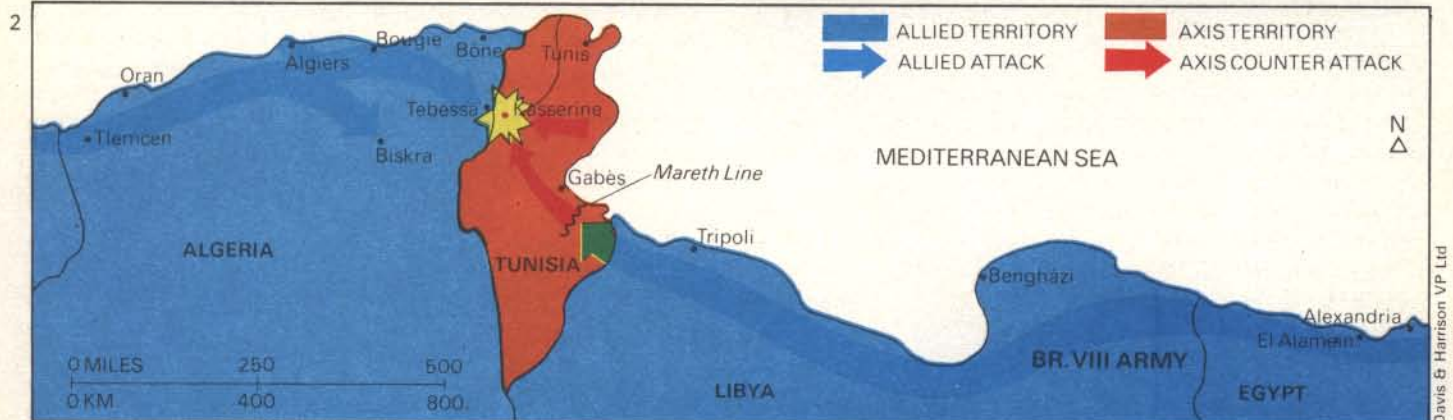
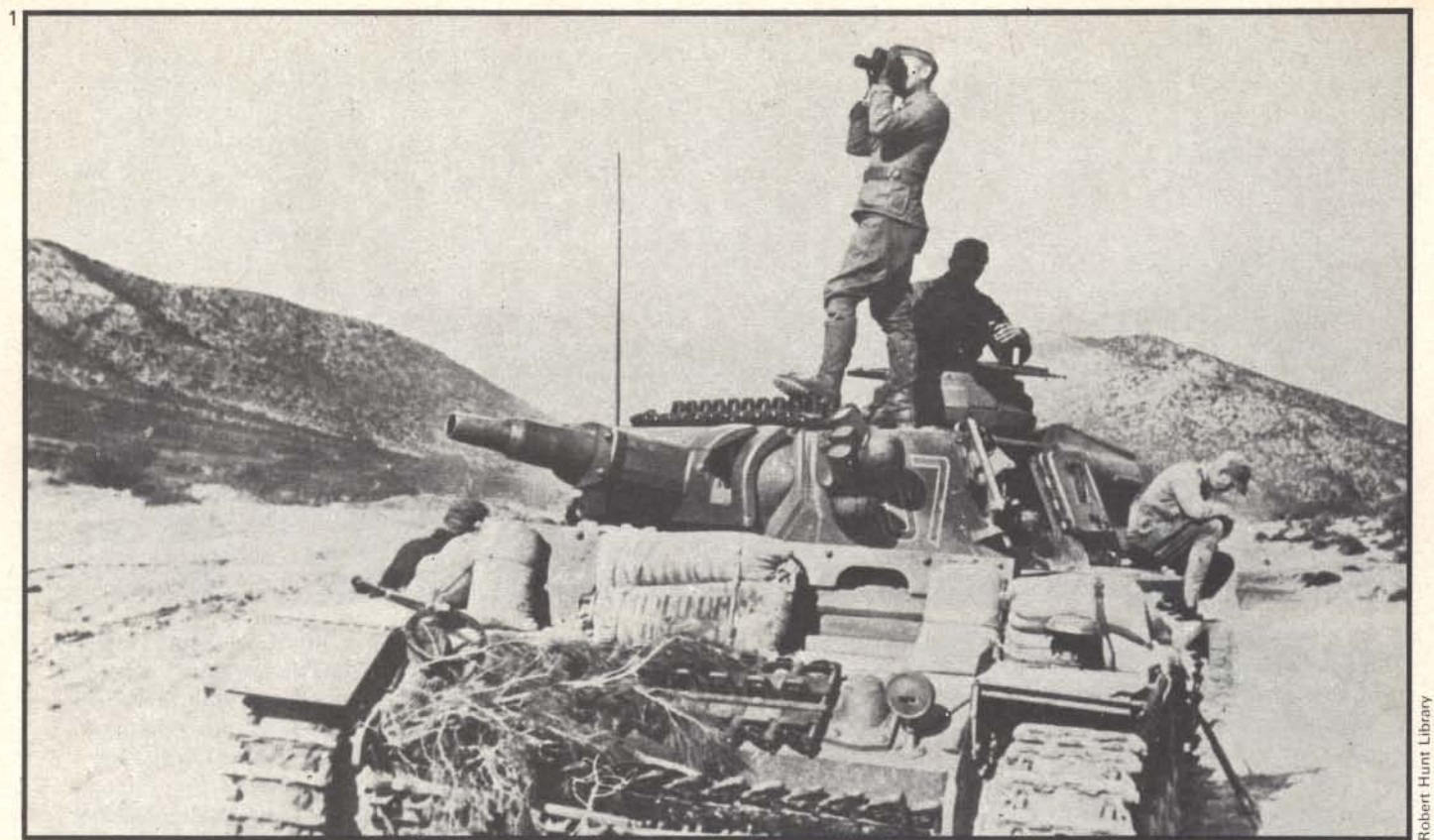
'Enemy artillery, well directed, flung shells at us. But we charged through the shell-bursts, our trucks widely spaced. Only one truck was hit. The rest raced to the foot of a slope. A deep wadi across our course forced us to detruck. The men leaped out with their weapons. Soon we had scrambled to a height level with Buchholz's company, whom we could see on the mountain to our left across the road. I remember reflecting vaguely that my right flank was in the air. Bathed in sweat, we worked our way higher and higher towards the mountain crest'.

#### Point-blank range

Because most of the German force stayed in the valley, instead of trying, like Schmidt, to outflank the Americans in the mountains, the attacks made very little progress until nightfall. Then several Allied units were cut off or dispersed. Meanwhile the attack at Sbiba had met stronger resistance. The Coldstream Guards Regimental History describes the battle their 2nd Battalion saw that day:

'German tanks and infantry began to advance up the





1 A Panzer Mk IV Ausf.E of 10th Panzer Division in the Kasserine Pass, one of the 150-odd tanks with which Rommel smashed through the Allies on 20 Feb.

2 The North African theater of war from November 1942 to February 1943. Kasserine delayed a link-up of the Allied forces, converging from east and west, by six weeks.

valley. It was raining heavily. Thirty tanks appeared among the cactus groves and huts and approached the battalion front; when they were at point-blank range the anti-tank guns opened fire. The first shell from Lieutenant Lord Leveson's gun hit the ground some 12ft in front of him; the second knocked out a Mark IV tank; the Germans veered off to their right and attacked the American positions. There they received the same treatment and retired leaving five tanks derelict in front of the Allied lines'.

Rommel visited both battlefields on 19 February and decided that Kasserine Pass was the more promising opening. He therefore ordered 10th Panzer Division to reinforce the *Afrika Korps* detachment there. At Sbiba the Germans continued their attacks but achieved no significant gains.

Kasserine was now the decisive point. During the night of 19/20 February the forces there were reinforced by a

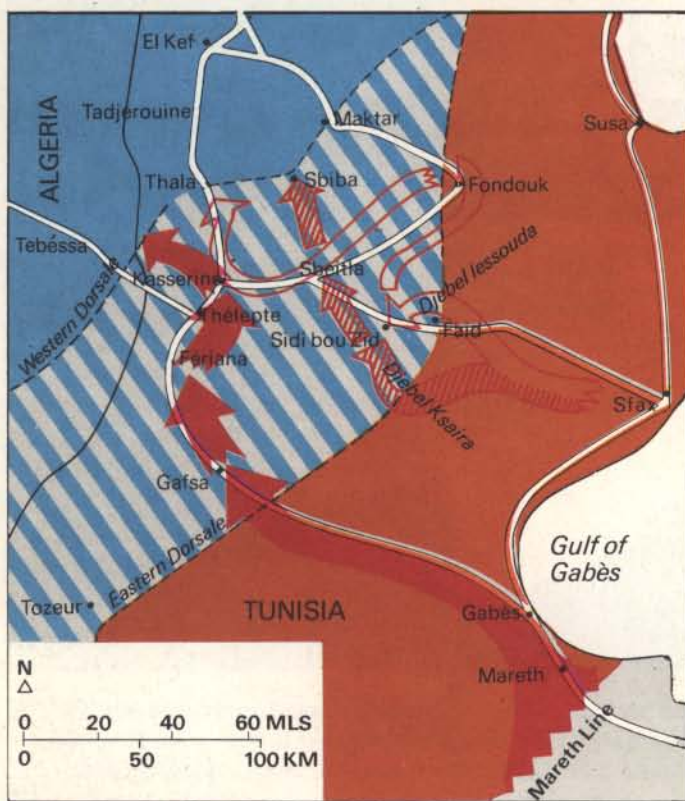
battalion of American infantry and by 'Gore Force', a squadron of tanks and a company of infantry with field and anti-tank artillery support. German reinforcements were stronger, but von Arnim had retained nearly half 10th Panzer Division's tanks, including all the Tigers, and the remainder did not arrive until after the *Afrika Korps* detachment had begun its attack. When they did appear the Allied line was at last broken on the southern side of the Pass. Units began to withdraw, sometimes leaving undamaged equipment behind in their haste. In the north, Gore Force fought on until all its tanks were destroyed. Then it fell back on its parent unit, 26th Armored Brigade, in a defensive position on the road to Thala.

On 21 February, Rommel decided to push his *Afrika Korps* elements towards Tebessa, but this was no more than a feint. The main axis of advance was to be towards Thala





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△ A British Hawker Hurricane IID tankbuster swoops over the target—Axis armor. Its two 40mm cannon, each with 12-15 shells, were deadly against thin-skinned vehicles. 255 Squadron used them on Rommel's motor transport during 22 February along the Thala road: the first really effective intervention by the Allied Air Forces, previously hampered by bad weather and a lack of forward airfields.

◁ Tunisia 1943; three freshly equipped Panzer divisions cut 80 miles through the thin, over-extended Allied line.

▽ German paratroopers advance. These tough soldiers fought earlier Allied attacks to a standstill before Kasserine.



Robert Hunt Library

and El Kef. 10th *Panzer* Division began its advance at 0930. The Allied tactics were to fight a series of delaying actions on the ridges which crossed the Thala road, until a new defensive line was established outside the town itself. Although the British Valentine and Crusader tanks were outclassed by the German armor they managed to slow the advance so much that Rommel found it necessary to go forward himself and urge them on:

'The division was not getting forward fast enough, and I had to be continually at them to keep the speed up; they did not seem to realize that they were in a race with the

Allied reserves. To form my own judgement of the situation I drove forward to the leading scouts to see what was happening. I found them lying in a cactus grove close beside an Arab village. Heavy artillery fire was falling in the village and confusion was complete, with every living creature scattering in all directions. Colonel Bayerlein collected up eggs which some hens had dropped. Then we, too, had to get into cover, and Bayerlein crawled amongst the cacti carrying his precious booty. We came to no harm—neither, fortunately, did the eggs'.

It was dusk before the remnants of 26th Armored Brigade



withdrew into the defensive position on the last ridge before Thala. As the last British tank passed through it was followed by a German column led by a captured British Valentine, its crew sitting on top, smoking cigarettes. To have such a stratagem prepared showed considerable foresight on the Germans' part. The column penetrated unrecognized until one tank passed too close to a slit trench. Told to 'keep away from my — trench, you're knocking it in'; the Germans replied with a shot and shouts of 'Hands up—come out. Surrender to the *Panzers*'. A confused battle followed in the light of burning vehicles, and although the German tanks were eventually destroyed the coherence of the defense line was gone. There was no retreat, however, and every available man was pressed into the firing line. A very welcome reinforcement during the night was the artillery of the American 9th Division, under Brigadier General Irwin, which had travelled 800 miles from Tlemcen in Algeria in four days.

Next day, 22 February, Rommel intended to continue his assault on Thala, but the Allies began the day with a counter-attack to recover some of the ground lost during the night. This sign of aggression and the fire of Irwin's guns convinced Rommel that 'the enemy had grown too strong for our attack to be maintained', and at the end of the day he ordered a gradual retreat. For the moment the Allies were conscious only of their own weakness, as Nigel Nicolson's account of his battalion's move into Thala makes clear:

'An isolated troop-carrier approached our little convoy of lorries, bristling with weapons and crammed with GIs.

"He's right behind us!" they shouted . . . On the outskirts of the town we dug makeshift trenches and waited for the dawn. When dawn came we gazed in astonishment at an empty horizon. Rommel had vanished'.

Rommel had, in fact, decided that he had lost the race against the Allied reserves. It would be easy to say that if he had had complete command of the battle from the beginning, he might have won a decisive victory. But it is doubtful that the Germans would ever have achieved this in time to face Montgomery's assault on the Mareth Line. Rommel had known since he had heard of the Torch landings that the Axis armies in Africa were doomed. He only hoped to be able to save as many of his men as possible. But he was relieved of his command in March, and 300,000 men were left to fight on hopelessly under von Arnim.

Rommel, after a period of convalescence, went on to command the forces defending the north-west coastline of Europe, until the growing mutual distrust between him and Hitler led to his forced suicide after the July Bomb Plot. On the Allied side, Fredendall was found to be unsuitable for command and General Patton was appointed in his place, getting his first real opportunity to display his genius for armored warfare.

The American troops soon recovered from the bruising treatment they had met at Rommel's hands and when combined with Eighth Army grew into a force of the highest quality, whose performance in Italy has been too often forgotten since World War II.

Michael Orr



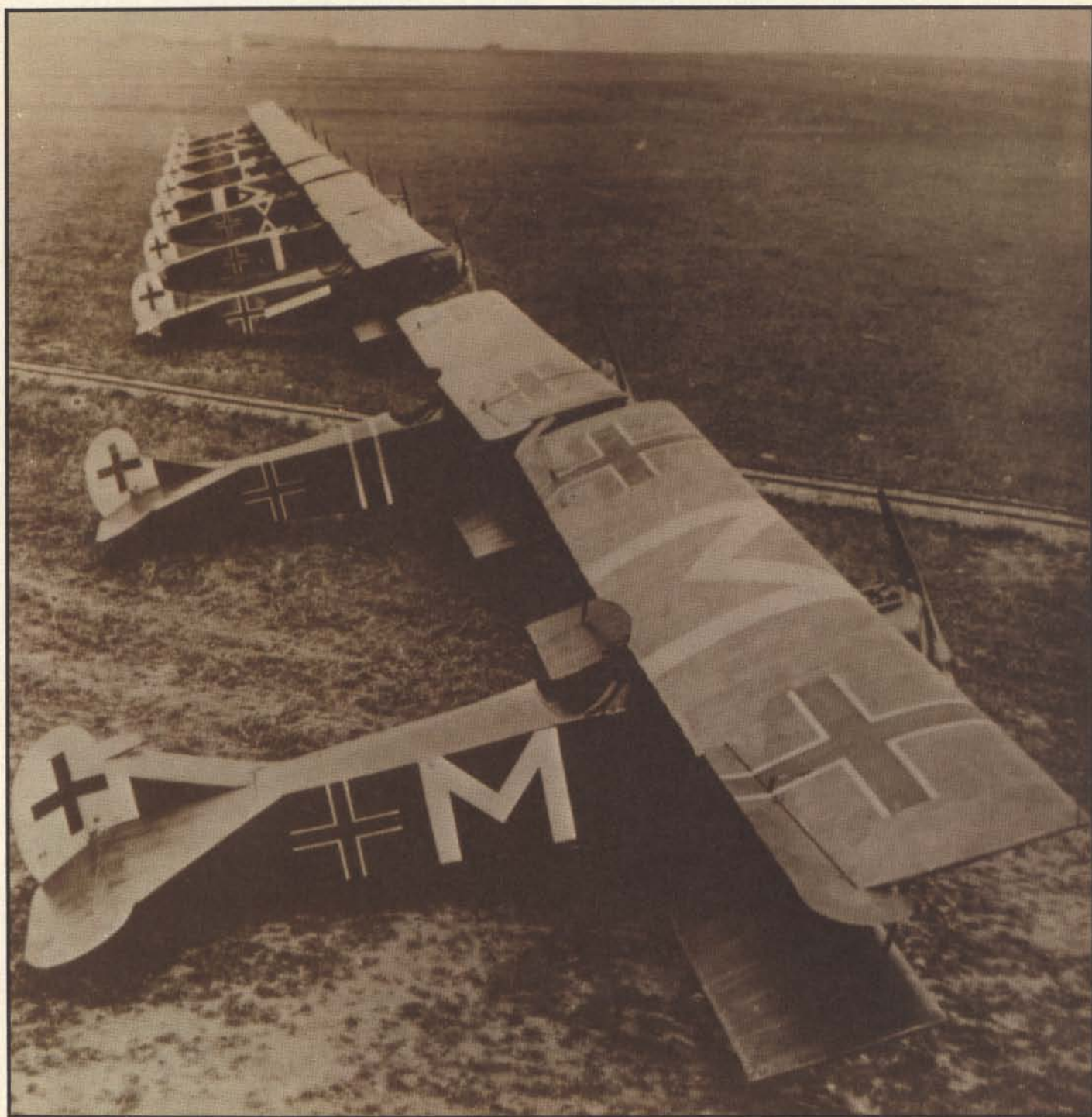
*The German harvest of victory, some of the 4,206 GIs captured in nine days—a great shock to American public opinion. Yet Rommel wrote afterwards, comparing the US*

*Army with the veteran British, 'They make up for their lack of experience by their far better and more plentiful equipment and their tactically more flexible command.'*



# FOKKER

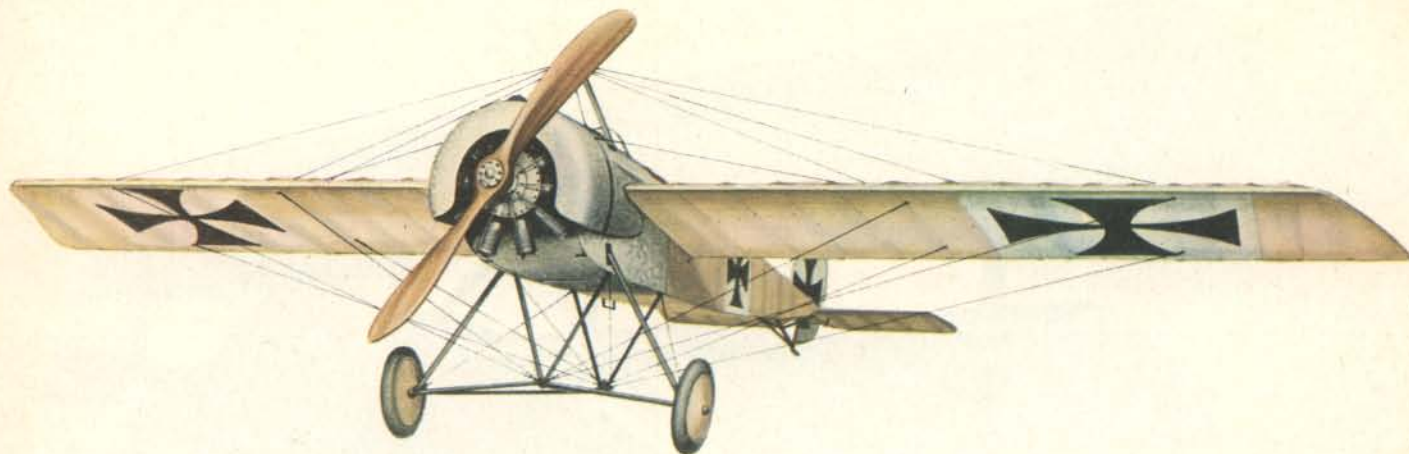
A string-bag of an aircraft—outdated, underpowered, unreliable—  
but it had the 'secret weapon' that terrorized the Allies



*Fokker D VII's of a pursuit squadron, German Air Service, in 1918. Probably the best German fighter to appear in large numbers during World War I, the D VII was both fast and easy to handle, even for inexperienced pilots.*

*It also had the advantage, unusual in its day, of being able to 'stand on its prop' to attack an enemy overhead. But high performance did have one drawback — a limited flying time of 90 minutes, less than was normal.*





Peter Sarson/Tony Bryan

Until 1915, the one thing that military pilots could feel secure about—in a world of engines that failed, undercarriages that snapped and wings that sometimes shed their fabric coverings—was an enemy plane that flew straight at them. A 'tractor' aircraft (one with a front-mounted propeller) could not have a machine-gun mounted to fire forwards, because one burst would blow its propeller off.

So the German Air Service suffered a nasty shock in March of that year when French ace Roland Garros shot down five of their planes with a forward-firing gun. Garros' propeller blades had been fitted with steel wedges to deflect harmlessly those bullets which would otherwise have smashed them.

The advantage of this invention was short-lived, however. In April, ground fire brought down Garros behind the German lines and his machine was captured intact. And a young man called Anthony Fokker produced the German answer to the French device—an invention which led, in a short time, to devastating attacks on the Allied air services. The notorious 'Fokker Scourge', as British MPs called it in angry scenes in Parliament, had begun. So had the legend of Anthony Fokker as a great aircraft designer—a legend

which survived, despite evidence to the contrary, for over 50 years.

Aviation was still at the 'flying string-bag' stage when, in 1910, Fokker arrived in Germany to attend the technical college at Bingen. The 20-year-old Dutchman's ambition, however, was to become a pilot and he soon managed to enrol in a flying school near Mainz. Fokker's father was a prosperous coffee planter from the Dutch East Indies who could subsidize his son fairly generously, and with this help young Fokker established himself towards the end of 1911 at Johannisthal, near Berlin, as an aircraft manufacturer and flying instructor. When World War I came in 1914 the Netherlands remained neutral and Fokker continued to work in Germany, where he was now under contract to teach German military personnel to fly.

Fokker was not a brilliantly original designer. His first planes to enter German service, the M5 and M8 monoplanes, were pre-war designs which were used in small numbers as unarmed reconnaissance planes and artillery spotters. They bore a suspicious resemblance to the French Morane-Saulnier monoplanes of the same period.

He was, however, an able test pilot—and a first-class

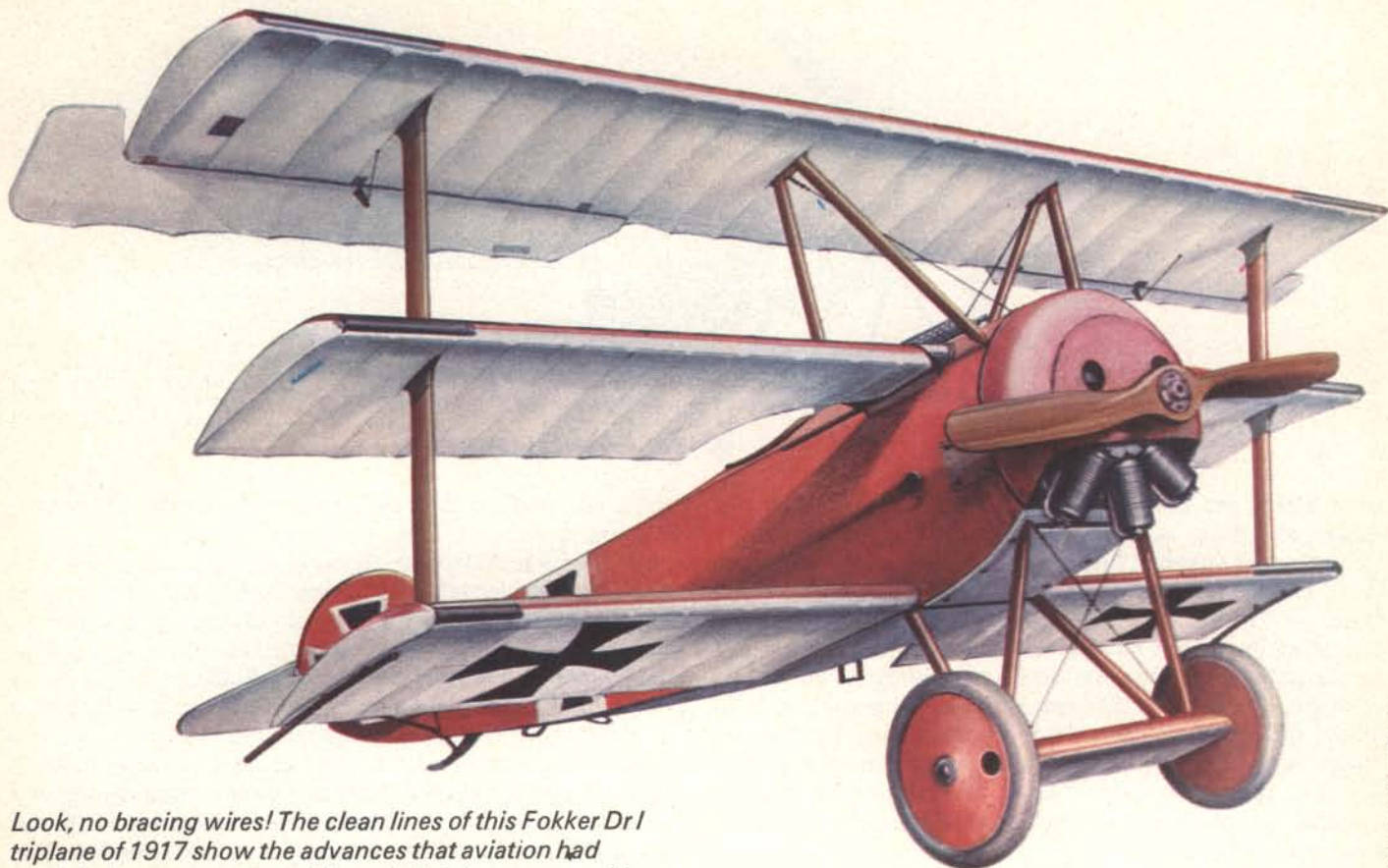
△ Outdated, underpowered, and anyway a near-copy of a French design, the Fokker Eindekker still managed to terrorize the Western Front in 1915. The reason: an interrupter gear which allowed the pilot to fire his machine-gun through the propeller.

▷ Anthony Fokker poses in front of one of 'his' designs. A brilliant test pilot, Fokker had a knack of knowing instantly what modifications were needed to turn an experimental model into a good plane. But as a designer he was sometimes eccentric: one of his weirder creations had triplane wings at the front of the fuselage and biplane wings amidships. It flew just twice.



Imperial War Museum





*Look, no bracing wires! The clean lines of this Fokker Dr I triplane of 1917 show the advances that aviation had made in three years of war. Though highly maneuverable and a formidable opponent, however, the 'Tripe' still had a tendency to fall apart if overstressed in combat.*

Peter Sarson/Tony Bryan

salesman with an acute sense of timing. When German attempts to copy Garros' armored propeller failed disastrously—their steel-clad bullets were too tough for the armor—Fokker seized his chance.

Returning to his works at Schwerin with the propeller from the captured Morane and a German Parabellum machine-gun, Fokker and his design team took only days to produce an alternative. Their interrupter gear was a simple crank mechanism that allowed a fuselage-mounted gun to fire only when the propeller was clear of the muzzle.

With the Parabellum mounted on the engine cowling of one of his M5 single-seaters, Fokker demonstrated the invention before German military representatives—presumably without laying too much emphasis on other designers' earlier versions of the same device. Forty or 50 Fokkers equipped with the new gear were immediately ordered, and the Fokker legend had been born.

These new aircraft, officially designated E1 (the 'E' being for *Eindekker*, or monoplane) first appeared on the Western Front in the summer of 1915, and differed little in design from their forebear, the M5. The fuselage was a simple box of welded steel tube, ending in the distinctive, comma-shaped rudder that was to become a Fokker 'trademark'. The wings had a wooden frame, covered by fabric and braced by cables from above the engine cowling. They had no ailerons; instead, lateral stability was controlled by warping the whole wing structure. The elevators were of the 'all-moving' type, with no fixed tailplane. The gun mounting was progressively modified to take account of recoil and other problems, but eventually was standardized to mount a Spandau gun slightly starboard of center.

The E1's power plant was an 80hp Oberursel 7-cylinder rotary engine protected by a semi-circular metal cowling cut away at the bottom as a precaution against the build-up of an inflammable mixture of castor oil and petrol. Rotary engines, in which the whole cylinder-and-propeller unit revolved around the crankshaft, gave good service throughout World War I, but the Oberursel—copied from the French La Rhône—was somewhat unreliable.

The role of the Fokker E1 was seen at first as primarily a defensive one. They were issued in ones and two to reconnaissance squadrons as protection for their two-seaters.

But in the hands of pilots like Oswald Boelke and Max Immelman they soon assumed an aggressor's role. Surprise helped them at first, as it had helped Garros. So did the 'Immelman turn', a half loop and half roll combination which might well be considered the beginning of aerobatics. And when a more powerful version of the monoplane, the E III with a 100hp engine, was introduced in August 1915 German air superiority became all too obvious—particularly to the crews of badly-designed British two-seaters, which were shot down in droves.

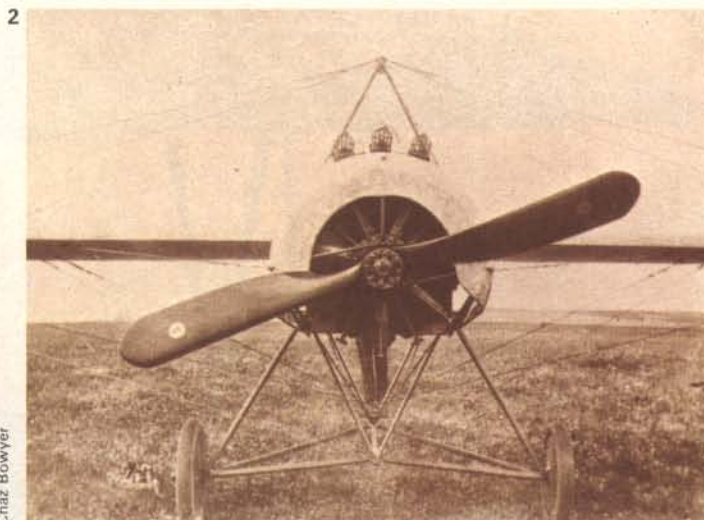
Fokker pilots soon realized the value of working offensively in pairs, the Number One setting up the attacks while the Number Two kept his eyes open for any enemy appearing from behind or up-sun. Occasionally the Fokkers from several reconnaissance squadrons were brought together to operate, in effect, as a fighter squadron—a 'barrage' to stop the hitherto successful French bomber pilots from crossing the German lines.

The Fokker pilots themselves were ordered not to cross





Chaz Bowyer



Imperial War Museum



Chaz Bowyer

Many of Germany's leading 'aces', who had the pick of new machines, flew Fokkers at one time or another.

1 Lt. Ernst Udet, who with 62 claimed victories was his country's second top scorer, with his D VII.

2 Two guns were too much for the feeble engines of the earliest 'scouts' to carry, but this Fokker E IV—a development of the E III—mounted three. It had a 160hp Le Rhone engine. The pilot: Lt. Max Immelman, who claimed 15 victories.

3 Hauptmann Hermann Goering, later Germany's air force chief in World War II, with his all-white Fokker D VII.

4 Hauptmann Baron Manfred von Richthofen with his own flight on the



Imperial War Museum

Western Front. The 'Red Baron', who claimed 80 kills before he himself was shot down, flew several Fokker Dr Is—but never an all-red one, as is popularly believed. His all-red plane was an earlier Albatros.

5 Hauptmann Ritter von Tutsch (27 victories) set for take-off from Foulis, March 1918. Color schemes were at the whim of pilots—but red, for which the pigments were scarce in wartime Germany, was for 'aces' only.

6 The idea that provoked the 'Fokker Scourge'—a French Morane-Saulnier 'Bullet' of 1914 vintage, with deflector plates to stop the propeller from being shot off. Garros' plane was also a Morane, but a high-wing monoplane.



Imperial War Museum/Chaz Bowyer

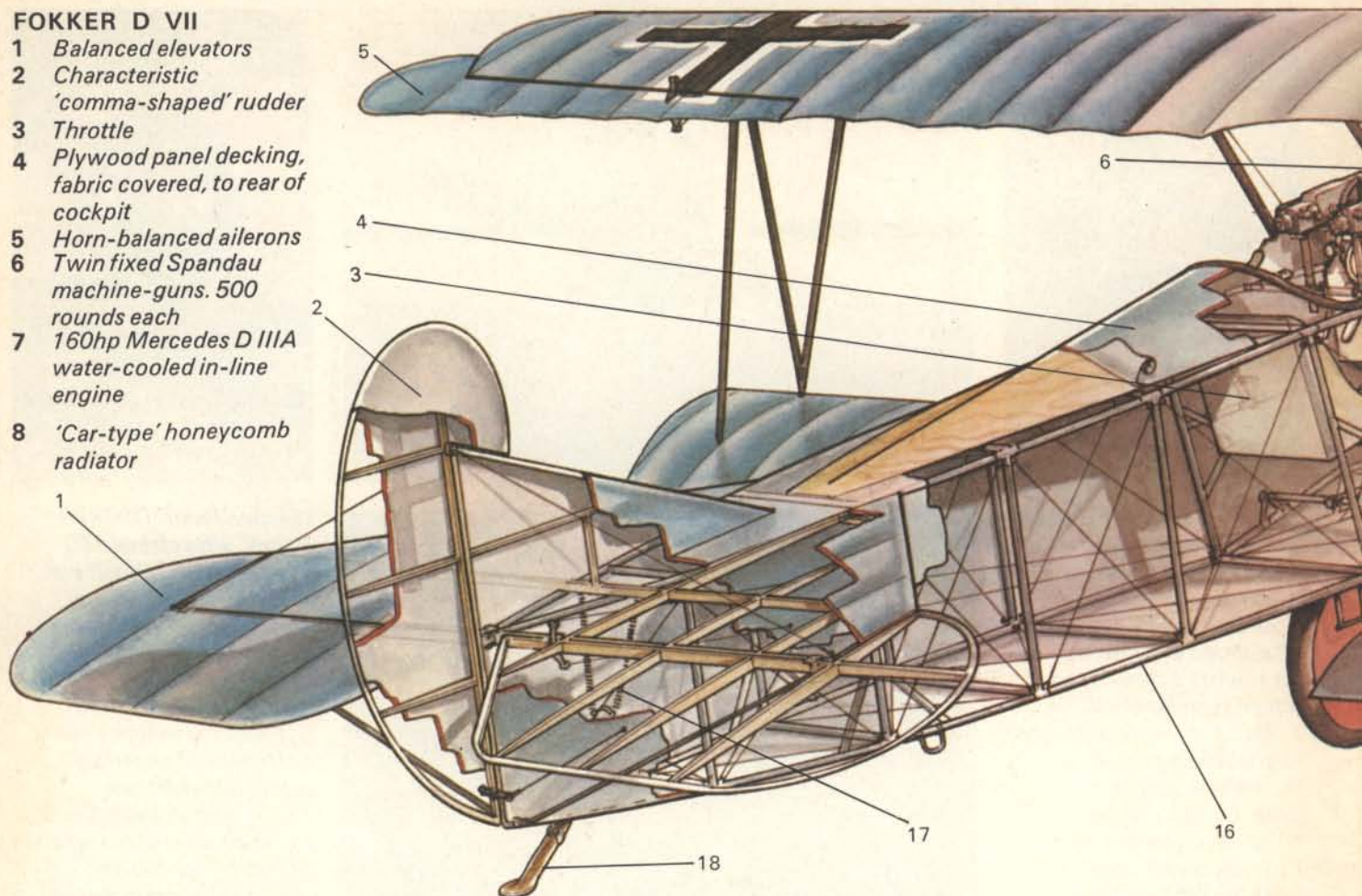


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## FOKKER D VII

- 1 *Balanced elevators*
- 2 *Characteristic 'comma-shaped' rudder*
- 3 *Throttle*
- 4 *Plywood panel decking, fabric covered, to rear of cockpit*
- 5 *Horn-balanced ailerons*
- 6 *Twin fixed Spandau machine-guns. 500 rounds each*
- 7 *160hp Mercedes D IIIA water-cooled in-line engine*
- 8 *'Car-type' honeycomb radiator*



the Allied lines because of the unreliability of their Oberursel engines, but inevitably some did, and intact E IIIs were obtained by both the British and the French. Tests showed a maximum speed of about 87mph, a service ceiling of only 11,500ft (with a consequently indifferent performance 'at altitude'), and a poor rate of climb that fell from 700ft/min at 1,000ft to a mere 80ft/min at 11,000ft.

Nevertheless, these machines were a definite technical advance in their day and for six months the Fokkers, along with the new C-type two-seaters, ruled the skies. Immelman, for one, ran up a score of 15 victories before he was killed on 18 June 1916, when his plane broke up in the air during an attack on a British machine. The interrupter gear gave considerable trouble in action, and accidents caused by Fokker pilots shooting their own propellers off were fairly common. One theory of Immelman's death is that he blew off one of his own propeller blades, the consequent imbalance setting up vibrations that tore out the engine and broke up his plane. There were also many accidents caused by collapsed undercarriages, for which inexperienced pilots and rough landing grounds were probably equally to blame.

By the spring of 1916, more than a hundred Fokkers were operating in France, but Fokker supremacy was on the wane. The Allies now had better planes than the ageing E III—like the nippy French Nieuport II, whose Lewis machine-gun was mounted on the upper wing to fire over the propeller, and the British DH 2, a 'pusher' biplane whose pilot had his Lewis in front of him for attack and the mass of his engine behind him for protection.

Under pressure to produce a replacement for the mono-

planes, Anthony Fokker next manufactured a series of biplanes powered by either Mercedes water-cooled engines (the Fokker D I and D IV) or Oberursel rotaries (the D II, D III and D V). None measured up to the standards of Germany's new Albatros fighters, however, and they were soon relegated to quieter theaters or to training duties.

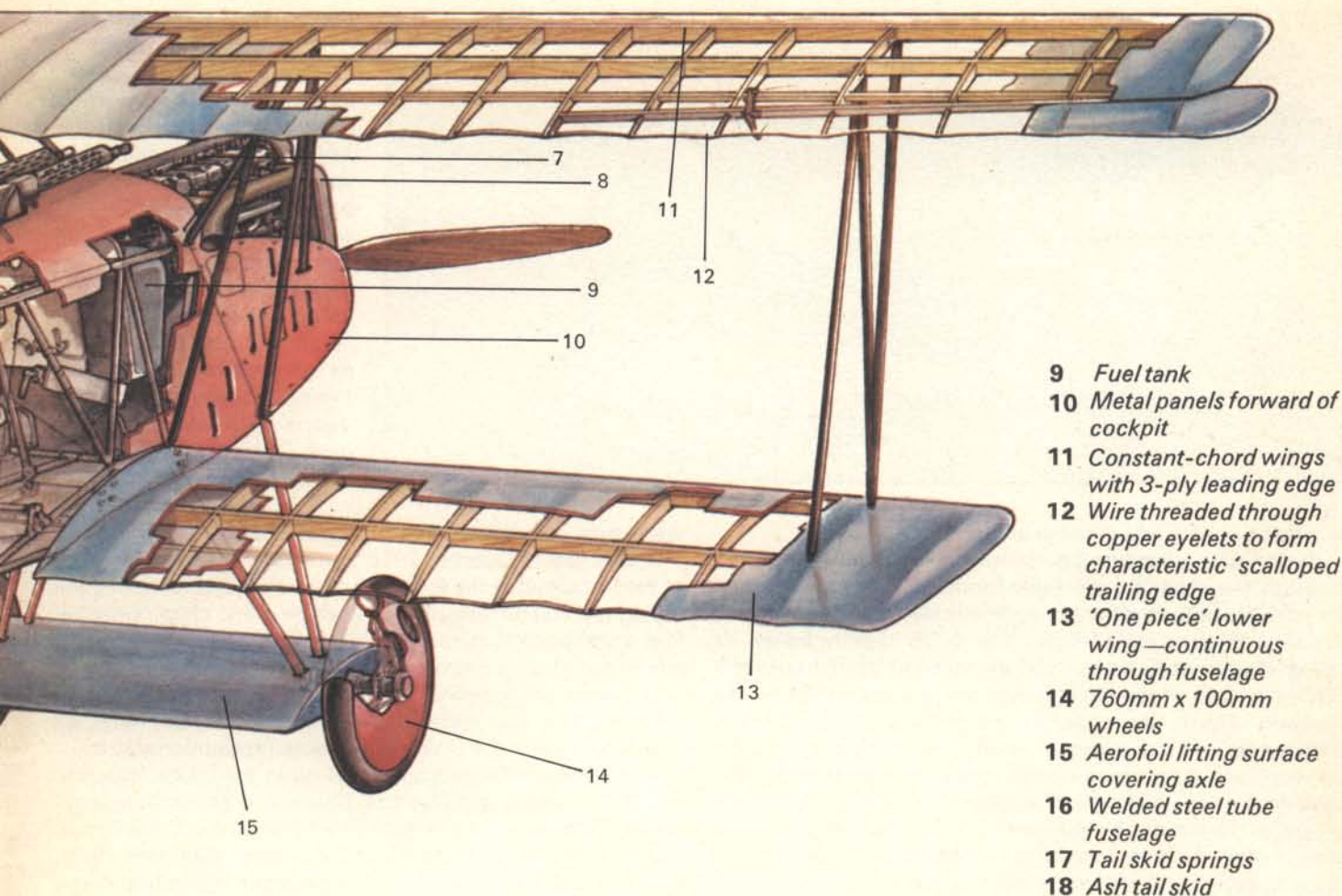
Early in 1917, however, Fokker had a second chance to pull an urgently needed rabbit out of a hat. A new British plane, the Sopwith Triplane, began to run up victories at the front. German pilots, impressed with its maneuverability and performance at altitude, asked their High Command urgently for a German equivalent. Fokker visited the front in the spring of 1917 and the ace Baron Manfred von Richthofen told him of the new British triplane; he was also shown a crashed sample. He returned to his factory determined to build a triplane that would match the Sopwith and restore his reputation as a designer.

Fokker's chief designer, Reinhold Platz, a 31-year-old former welder, was told to produce the new plane with the utmost speed to forestall competitors with similar ideas. Two prototypes were rapidly produced, and by the middle of August the first two production aircraft were supplied to von Richthofen's newly-formed fighter wing.

Platz's triplane was a superbly designed aircraft. Only 18ft 11½in long, and with a span of just 23ft 7¾in, it could climb to 20,000ft, remained highly maneuverable even when near its ceiling and, though its maximum speed was an unexceptionable 103mph, its initial rate of climb was more than 1,000ft/min.

The Dr I, as it was designated, had the typically Fokker





- 9 Fuel tank
- 10 Metal panels forward of cockpit
- 11 Constant-chord wings with 3-ply leading edge
- 12 Wire threaded through copper eyelets to form characteristic 'scalloped' trailing edge
- 13 'One piece' lower wing—continuous through fuselage
- 14 760mm x 100mm wheels
- 15 Aerofoil lifting surface covering axle
- 16 Welded steel tube fuselage
- 17 Tail skid springs
- 18 Ash tail skid

fuselage of welded steel tube, with curved top-decking and tapered plywood panels to fair-in the engine cowling. The staggered, unequal-span wings were wooden framed, with balanced ailerons of welded steel tube. Platz retained the comma-shaped rudder, but this time used balanced elevators. The power plant was usually a 9-cylinder Le Rhône rotary built under license in Sweden (although some planes were fitted with a similar Oberursel unit), and the armament was twin fixed Spandaus firing through the propeller arc.

By October 1917, production Dr Is were arriving steadily at the front. But now, two fatal crashes that were evidently caused by structural failure led to an inquiry which uncovered evidence of shoddy manufacture in the wing structure. All Dr Is were grounded for some weeks while the faults were rectified.

In the meantime, though, the new triplane had scored some remarkable successes. Richthofen, for example, began a memorable association with the plane when, on 1 September 1917, he shot down his 60th victim while flying one. The Red Baron went on to fly half a dozen Dr Is—none of which, it seems, was painted red all over as is generally thought—and claimed 80 kills before he himself fell on 21 April 1918. Another triplane devotee was Werner Voss, a far more daring fighter than von Richthofen, who claimed 21 'kills' in just over three weeks before he too was shot down.

A month after Richthofen's death the last Fokker triplane, the 320th, was completed. By now it was well outnumbered by a new generation of twin-gunned Allied biplanes, such as the British Sopwith Camel and SE 5a and

the French SPAD XIII. But it continued to perform creditably up to the summer of 1918, mainly in the service of the Richthofen *Geschwader*.

By this time, the Fokker factory was fully occupied with producing two new fighters—one of which was probably the best to see service during World War I. Both the D VI and D VII were biplanes, and both originated from competitive trials which the German Army had held in January 1918 for single-seater scouts.

The D VI, produced because the authorities wanted a new rotary-engined fighter, was another Reinhold Platz design, and a good one. However, a rotary engine with enough power did not seem to be forthcoming, and production stopped in June 1918 after only 60 had been built.

The D VII's forerunner, the V 11, was entered in the January competition as a contender for the production contract to be awarded for a fighter equipped with an in-line water-cooled engine. The best power plant of this type at the time was the 185hp BMW IIIa, but production had only just begun and in the meantime the readily available 160hp Mercedes had to be employed. Some modification to the V 11 was necessary to correct directional instability and a tendency to swing when diving. Lengthening the fuselage by 16in, moving the upper wing aft to counter the consequent tail-heaviness, and adding a tail fin revolutionized the flying qualities of the V 11 and it was ordered into quantity production as the D VIII.

This machine turned out a winner. With the 160hp Mercedes engine it was slightly lacking in power, but could still reach 116mph and operate at heights of up to 22,900ft





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*The machine that might have repeated the 'Fokker Scourge' had the war lasted longer—the Fokker D VIII parasol monoplane of late 1918. Though its engine was an Oberursel rotary of only 110hp, it had a top speed of nearly 130mph, thanks to clean lines which minimized slipstream 'drag', and also had good handling characteristics. Its twin Spandaus fired through the propeller by means of a synchronizing gear. Only a few D VIIIs reached combat squadrons.*

and had an initial rate of climb of 850ft/min.

Armed with twin fuselage-mounted machine-guns firing through the propeller arc (synchronizing mechanisms had by now become much more sophisticated and reliable than Fokker's original installation), the D VII rapidly belied its rather clumsy appearance and established itself from April 1918 onwards as the pre-eminent single-seat fighter on the Western Front. Its superbly responsive (but not too demanding) flying qualities made even mediocre pilots appear good, it remained maneuverable at high altitude, and because of its thick wing section it could 'hang on its propeller' to fire at an opponent's belly in an attitude from which other fighters would have stalled and gone into a spin. In fact the D VII could be induced to spin only with difficulty, and had a strong tendency to recover of its own accord.

The D VII was also immensely strong and withstood substantial battle damage. Its one weakness was a tendency for the ammunition boxes behind the engine to overheat in flight, with the result that the incendiary ammunition ignited. After several fatal accidents, the use of incendiary ammunition in D VIIIs was prohibited.

When the 185hp BMW engine became available, the D VII became an even more formidable weapon. By November 1918 a total of 775 were in operation, and so highly did the Allies regard the D VII that the Armistice agreement specifically required the surrender of all Fokkers of this type.

The last Fokker fighter to see action during World War I was the D VIII (initially known as the E V), a parasol monoplane with a 110hp Oberursel 9-cylinder rotary engine. Rheinhold Platz had always been impressed with the virtues of the cantilever monoplane and, after experimenting with both low-wing and mid-wing types, he finally evolved three parasol types which were entered for a fighter aircraft competition in June 1918.

From these came the D VIII, production of which was required at the rate of 80 aircraft a month and, by the end of July, 20 had arrived at the front. Almost immediately there was a series of crashes caused by wing structural failures that cost the lives of three pilots, and the type was grounded. An investigation discovered that the wing structure of production planes was insufficiently strong and failed to meet Platz's design specification. The evidence strongly suggested that sub-standard materials and inadequate supervision of manufacture were responsible, and there

were even suggestions that Anthony Fokker be prosecuted.

It was late in October 1918 before the D VIII reappeared at the front, and in the few days of combat that remained the 'flying razorblade' established itself as a first class fighter: it had a rapid rate of climb (initially 1,600ft/min), and a good speed and service ceiling. It possessed exceptional visibility, and combined outstanding maneuverability with sensitive controls. The war ended before more powerfully-engined developments of the D VIII could reach production status.

Many Fokker fighters soldiered on in the years of peace, the D VIII being used by the Dutch and the Italians until about 1925, while the famous D VII flew in the Netherlands, Belgium, Poland, Switzerland, Sweden, Denmark, Italy, Spain and the US, some of these aircraft still being in use just before the outbreak of World War II.

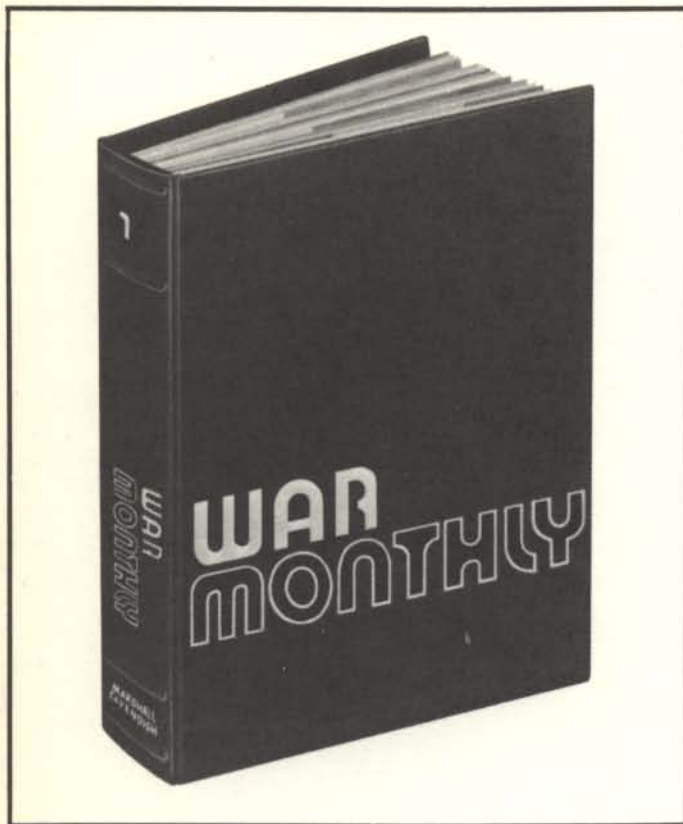
Anthony Fokker himself, only 28 years old in 1918, fled back to his native Holland after the war. Never a popular figure at his factories, Fokker feared for his life when the Bolshevik revolution which swept Germany in November 1918 reached his Schwerin works, and he escaped to Berlin in disguise. For some days he remained in the capital to organize his affairs, but he took care not to venture forth without an escort of naval deserters whom he had recruited as bodyguards. He departed from Germany the richer by £1½ million, taking with him his fiancée (the daughter of a German general) but leaving behind 400 engines and 220 airframes carefully hidden from the Allied control commission—and tax liabilities of over £700,000. In due course the engines and airframes were smuggled into Holland in six special goods trains (possibly with the connivance of the German government) and a deal was negotiated with the German Finance Ministry to settle the tax debt.

Fokker was a superb demonstration pilot and an astute businessman, but he had no formal qualifications in engineering and it seems probable that most of his successful productions—from the machine-gun interrupter gear to the D VII—were mainly the work of his design team. He was, however, quick to disclaim any liability when faulty materials and poor workmanship were found to be the cause of accidents to Fokker aircraft. And he could be exceedingly callous: for example, when his designer Martin Kreutzer was killed because of a jammed rudder on the D I biplane, Fokker arrived at the scene of the crash and proceeded to shout reproaches at the mortally injured, but still conscious, pilot for wrecking the plane.

**Rodney Steel**



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